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Contents

	PAGE
EDITORIAL NOTES: A Year's Chemical Trade; U.S.A. and European Cartels; British Fuel Conferences; Cellulose Acetate Patents; Sir Alfred Mond's Mission	45
The Manufacture of Viscose Silk	48
Chemical Trade Returns for December	50
Safeguarding Act: Biphosphate Inquiry	51
"C.A." Queries	54
From Week to Week	55
Patent Literature	56
Weekly Chemical Prices and Market Reports	59
Company News; New Chemical Trade Marks; Chemical Trade Inquiries, etc.	64
Commercial Intelligence; New Companies Registered	66
THE CHINA CLAY TRADE REVIEW	5–10

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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A Year's Chemical Trade

THE Board of Trade returns for December are of more than usual interest, since they contain the complete statistics of overseas chemical trade for the past year in comparison with those for 1926 and 1925, as well as the returns for the month. In both cases the result is most encouraging as showing a progressive recovery and already a return to about the level of 1925. Comparing December of 1927 with the corresponding month of 1926, there is an increase of £95,579 in imports, of £591,659 in exports, and of £5,133 in re-exports. For the whole year chemical imports show a fractional increase over 1926, and a more substantial one over 1925. Exports show a gratifying recovery from the low level of 1926, the improvement amounting to £1,778,519, while the total is within £186,967 of the 1925 standard.

In the detailed figures for the year, tartaric acid imports have steadily declined and coal tar products, though about two-thirds of the 1926 imports, are still nearly double those of 1925. Crude glycerine imports have advanced from £9,628 in 1925 and £8,684 in 1926 to the surprising figure of £74,566. Nickel oxide imports, on the other hand, which stood at £177,557 in 1925 and £77,484 in 1926, fell to £3,238 last year. Dyestuff imports were just double those of 1926, but less by £4,524 than in 1925. Alizarine imports show a substantial decline on both years.

Turning to chemical exports, sulphuric acid is better than in 1925, but lower than in 1926; tartaric acid has increased to about double the 1925 figure; ammonium chloride figures are better than for either of the two preceding years; and ammonium sulphate, though still below the 1925 total, is substantially better than in 1926. Bleaching powder exports are better, and coal tar products show a substantial improvement over both preceding years. Crude glycerine has distinctly declined, but the distilled quality remains slightly above the 1925 level. Both potassium and sodium compounds have improved appreciably, but zinc oxide is down. Drugs, medicines, etc., have declined somewhat, but coal-tar dyestuffs are well above the 1926 figure, though considerably short of that for 1925. Painters' colours have recovered well from the fall of 1926, and are almost level with the 1925 standard.

The good point about the year's statistics is that the improvement has been gradual and steady and is fairly well spread over the whole industry. The reasonable inference is that it is the natural result of more stable conditions and will continue if these conditions are maintained, as there is every prospect of their doing.

U.S.A. and European Cartels

WE learn that the United States Department of Commerce has, at the suggestion of the Chemical Trade Advisory Council, called a conference of the American chemical industry. The most important point to be discussed will be the combines and agreements in European chemical industry. Four or five hundred leading United States chemical industrialists have been invited, and the U.S.A. trade commissioners in London, Berlin, Paris, and Rome will go to the United States to attend the conference.

This evidence of the continued interest of the American chemical industry in European developments is confirmed by a number of Press comments. Thus the official organ of the American Chemical Society, *Industrial and Engineering Chemistry*, speaks of "this new competition which goes beyond the national phase and bids fair to line the rest of the producing world against the United States in the effort to supply the consuming market" as "a threat of disaster, a challenge to brains, a stimulation to greater effort, and a good or a bad thing depending as much upon your point of view and the degree of optimism or pessimism in your make-up as upon any data at present in hand." Excellent and reliable reports of the situation as it is developing come, it is said, from the Bureau of Foreign and Domestic Commerce, and

individual observers on the ground have tried to evaluate the several factors. The size of the international cartel seems, to some Americans, overwhelming. Others are less concerned with the size than with the leadership under which the negotiations have proceeded. They single out two men who seem qualified by long training and experience as chemists as well as business men to make the cartel a success, if such a scheme can be made to realise the purpose of its founders. "That such a cartel labours under some disadvantages," it is added, "must be apparent. The possibility of higher prices with the disappearance of competition in certain markets, the weight of overhead, the almost certain internal jealousies, and possible political complications with an organisation so large and powerful as to demand the serious attention of government—all have been noted."

While disclaiming any sense of alarm, five cardinal points in any policy for strengthening the American situation are suggested. The first is improved organisation of the American chemical industry, which—we learn with real surprise—is regarded as far behind European organisations. Secondly, corporations must place upon their directorates a larger proportion of technically-trained men—which is exactly what has been often said about chemical industry in this country. The third need is an extended programme of industrial research, based on fundamental work—a matter in which the United States has generally been considered rather advanced. Fourthly, an expansion of the excellent service already rendered by the Bureau of Foreign and Domestic Commerce is regarded as of vital importance. Finally, a note of warning is uttered respecting foreign loans, presumably the floating of such loans in the United States. "Foreign loans" says the official journal, "involve no risk to the international bankers making them, for they are not loaning their own money and they are not guaranteeing the safety of your money which they loan. Time and again we have pointed out the almost certain effect upon our own industry of possible interference with our tariff policies and the long-time effect upon American business and prosperity." All this tends to show that American chemical industry, though not alarmed, is acutely alert to the European situation. What both parties must strive to remember is the need of preventing legitimate scientific and commercial competition, which, within limits, may be good, from weakening what is of vital interest to the world—Anglo-American friendship.

British Fuel Conferences

In addition to the second Pittsburgh Conference, some preliminary particulars of which we gave in a recent issue, a series of British conferences are being arranged, all testifying to the ever-increasing importance of the fuel problem and the part that chemistry must take in its solution. The great international fuel conference, to be held at the Imperial College from September 24 to October 6, promises to rival in its range and authority the Pittsburgh gatherings. The technical programme of the conference, of which Sir Alfred Mond will be the president, has been divided into five classes—solid fuel, liquid fuel, gaseous fuel, fuel utilisation, and general aspects. The chief participating industries—coal, oil, gas, and chemicals—are to be strongly represented, and papers are being arranged on all aspects of fuel uses, treatment, composition, process of manufacture for special purposes, and grading. It all points to confidence in the future of coal as the basic source of fuels.

A second conference of more immediate interest at the moment is one on coal carbonisation, to be held in Birmingham on February 21 to 24, under the auspices of the Joint Fuel Committee of the Society of Chemical Industry, the Institution of Gas Engineers, the Coke Oven Managers' Association, and the Institute of Fuel Technology. The meetings are to be held in the Midland Institute Lecture Theatre, on Tuesday, Wednesday, and Thursday, and in the Queen's College on Friday. There will be morning and afternoon sessions on each day. Wednesday afternoon will be spent at the British Industries Fair, those attending the conference being invited by the management committee of the Fair to lunch there. On Thursday morning there will be a visit to the Birmingham Gas Works.

We understand that a large number of papers of outstanding interest will be discussed relating to coal carbonisation, and papers delivered before the constituent societies during the past two years will be reviewed in the discussions. The processes of low temperature carbonisation will be fully discussed on Friday. No papers will be fully read, contributors giving a summary only. We are asked to state that all chemists and engineers interested in the subject of carbonisation will be welcome at the conference, and application may be made for tickets and programmes to Dr. E. W. Smith, Hon. Secretary of the Joint Fuel Committee, Allington House, Victoria Street, London, S.W.1.

Cellulose Acetate Patents

We have no intention of rushing in front of the angels in an attempt to discuss the merits of patent actions that are actually being heard by H.M. Justices, but a brief reference may be made to the remarkable statements issued last week by British Celanese, Ltd., and the Non-Inflammable Film Co., Ltd., respecting patents governing the manufacture of cellulose acetate products. The British Celanese Co. began it with a statement headed "Infringement of patents," in which they claimed that the patents they hold embrace the manufacture of cellulose acetate silk in its various phases, including the production of the raw materials and the manufacture, dyeing, and finishing of cellulose acetate silk. The statement also mentions other articles, such as non-inflammable celluloid, non-inflammable non-breakable glass substitute, non-inflammable raw film for various purposes, and intermediate products for splinterless glass. "On the strength of these patents," the statement proceeds, "your board are of the opinion that it is impossible to manufacture cellulose acetate yarns, fabrics, and other textile articles of commercial value without infringing at some stage some of the company's patent rights."

The challenge implied in these words has been promptly taken up by the Non-Inflammable Film Co.,

who circulate in reply a statement by three well-known patent counsel (Messrs. J. Whitehead, K.C., R. Morris, K.C., and W. Trevor Watson) to the effect that this sweeping and general claim could not be sustained, and adding " It is in our opinion certain that cellulose acetate yarns, fabrics, and other articles of commercial value can be manufactured without infringing any valid subsisting patent rights." Such a sharp conflict of claims promises material for a test case of more than ordinary difficulty and importance, but whether it will ever come into the courts remains to be seen.

Sir Alfred Mond's Mission

CONSIDERABLE chemical interest attaches to the departure from London on Monday of Sir Alfred Mond, accompanied by Lady Mond and his daughter, Lady Erleigh, on a visit to Egypt, Palestine, Transjordania, Syria, and Iraq. This is no suddenly acquired interest, for Sir Alfred Mond, as president of the Palestine Survey Commission, has long been interested, from many points of view, in the future of the Middle East. His tour will be an extensive one. He is going to Egypt first and then travelling through Palestine, Syria, and Transjordania to Bagdad, where he will stay about a week. He will then return to Palestine, to inspect, among other things, the power stations of the Palestine Electrical Corporation. He hopes to return about the middle of March in time to continue his important work in promoting co-operation in industry.

It may be safely assumed that the exploitation of the mineral resources of the Dead Sea will especially appeal to Sir Alfred Mond's interest. Not only would such a scheme be an important step towards lessening the unemployment difficulties in Palestine and of averting any " crisis," but its chemical problems and possibilities are of an order that could only be tackled by a very large chemical organisation. It may be recalled that Sir John Russell, the head of the Rothamsted Experimental Station, made a tour of inquiry in Palestine last year, and on this occasion Sir Alfred Mond's party includes Sir Frederick Keeble, who recently left Oxford to accept the directorship of the new research department of Nitram, Ltd. The matter of fertilisers, as regards both the extraction of potash and other salts from the Dead Sea and the possible extended use of chemical fertilisers in the Middle East, may well prove an important item in the mission.

In This Week's Issue

A report from Germany states that a group of Hamburg merchants are offering nitrate of soda at £9 15s. per ton of 1,000 kilos, a considerable reduction on previous prices (p. 61).

Mr. W. E. Lea, of Runcorn, who has died in his 79th year, was responsible for many important inventions in connection with oxygen extraction (p. 53).

An inquiry into the complaint against the exclusion of calcium diphosphate from the list of articles dutiable under the Safeguarding of Industries Act was held this week (p. 51).

Representations have been made to the Board of Trade under Section 10 (5) of the Finance Act, 1926, regarding acid hydrocyanic, and synthalin (deka methylene diguanidine hydrochloride) (p. 54).

Books Received

QUALITATIVE ANALYSIS. By William Wardlaw and Frederic William Pinkard. London: Longmans, Green and Co., Ltd. Pp. 160. 3s. 6d.

SYNTHETISCHE UND ISOLIERTE RIECHSTOFFE UND IHRE HERSTELLUNG. Von Dr. Rudolf Knoll. Halle: Wilhelm Knapp. Pp. 257. 16.50 R.M.

THE PROPERTIES OF SILICA. By Robert B. Sosman. New York: Chemical Catalog Co. Pp. 855. $12.50.

THE INSTITUTE OF JOURNALISTS' GREY BOOK, 1928. London: Hall of the Institute, 2–4, Tudor Street. Pp. 134.

The Calendar

1928 Jan. 21	Society of Chemical Industry (Birmingham Section): Chemistry Dinner.	Queen's Hotel, Birmingham.
23 and 30	Royal Society of Arts: " The Scientific Foundations of the Refining of Petroleum." Dr. A. E. Dunstan. 8 p.m.	John Street, Adelphi, London.
24	Institute of Chemistry. Joint meeting with Bristol University Chemical Society: " What has become of Inorganic Chemistry ? " Professor Arthur Smithells. 5 p.m.	Chemical Dept., University, Bristol.
25	Society of Dyers and Colourists (Midlands Section). Joint Meeting with the Foreman Dyers' Guild: " Dyeing Hosiery containing Celanese." G. H. Ellis. 7.45 p.m.	The Globe Hotel, Silver Street, Leicester.
25	Faraday Society: Ordinary Meeting. 8 p.m.	Burlington House, Piccadilly, London.
26	Royal Society. 4.30 p.m.	Burlington House, London.
26	Royal Institution of Great Britain: " The Significance of Unsaturation in Carbon Compounds." Professor Jocelyn F. Thorpe. 5.15 p.m.	21, Albemarle Street, Piccadilly, London.
26	Institution of the Rubber Industry (Manchester Section): " The Proper Use of Organic Colours in Soft and Hard Rubber." W. J. S. Naunton.	Geographical Society, St. Mary's Parsonage, Manchester.
27	Physical Society. 5 p.m.	Imperial College of Science.
27	Society of Chemical Industry and Institute of Chemistry (South Wales Section): " Some Chemical Processes in the Metal Industries." Stanley Robson. 7.30 p.m.	Thomas's Café, High Street, Swansea.
27	Society of Dyers and Colourists (London Section): " Improvements in Dry Cleaning and Laundry Processes." A. I. Hatfield. 6.45.	Dyers' Hall, Dowgate Hill, London.
27	Institute of Metals (Sheffield Section): Conjoint meeting with Kindred Societies (All-metal Aeroplane Lecture). 7.30 p.m.	University, Sheffield.
28	Mining Institute of Scotland: Jubilee Dinner. 6.30 p.m.	Grosvenor Restaurant, Glasgow.
30	Institute of Chemistry and Society of Chemical Industry (Yorkshire Section): Discussion on " The Phenomenon of Wetting and Its Industrial Significance."	The University, Leeds.
Feb. 1	Society of Public Analysts. 8 p.m.	Burlington House, Piccadilly, London.
3	Chemical Industry Club Dinner.	Connaught Rooms, London.
10	Chemical Engineering Group: " Dry Cleaning and Finishing Machinery." E. A. Alliott. 8 p.m.	Burlington House, Piccadilly, London.
10	" Chemistry in Mediæval Islam." Dr. E. J. Holmyard. 5.30 p.m.	University College, London.
21–24	Fuel Conference at Birmingham. Arranged by Society of Chemical Industry, Institution of Gas Engineers, Coke Oven Managers' Association, and the Institute of Fuel.	Midland Institute.
Mar. 9	Institution of Chemical Engineers: Annual Corporate Meeting	London.

The Manufacture of Viscose Silk

Some Notes on the Chemical Engineering Group Meeting

By "Ubique"

The following account of the lecture on artificial silk, given by Mr. H. R. S. Clotworthy before the Chemical Engineering Group, was written by a well-known chemical engineer.

On Friday evening, January 13, at Burlington House, Mr. H. R. S. Clotworthy, M.A., B.Sc., A.R.C.Sc.I., A.I.C., discussed "The Manufacture of Artificial Silk with Special Reference to the Viscose Process" at a meeting of the Chemical Engineering Group, Society of Chemical Industry. The interest taken in the address was evidenced by the large attendance, and by the presence of an unusual number of ladies.

All classes of artificial silk, said Mr. Clotworthy, are manufactured in much the same way: in other words, certain general principles are invariably followed in manufacture. Some form of cellulose, either cotton, or paper or wood pulp, is the chief raw material. The cellulose industries require now about 40 million tons of raw wood per year. Twenty years hence it is estimated that they will require 60 million tons, but it is unlikely that this quantity will be available. The chemist, therefore, will shortly be faced with another problem, but one can rely on the same resource and the same skill in technical research as have hitherto been exhibited. No apprehension need be entertained about a shortage of suitable raw material. Bamboo pulp may possibly be used; or, maybe, whole masses of vegetable matter, now wasted, will serve for treatment by the chemist and chemical engineer of the future.

In Italy esparto grass and its residues are being converted into artificial silk. This is effected by treatment with chlorine arising in the electrolysis of common salt. This material may be superseded and the future may find other materials being tried and found useful.

There are four well-known processes for the manufacture of artificial silk: (*a*) Chardonnet, (*b*) Cuprammonium, (*c*) Viscose, and (*d*) Cellulose acetate.

The Viscose Process

The viscose process was essentially the one considered by Mr. Clotworthy. Wood pulp sheets are placed vertically in a tank and immersed in caustic soda solution of a certain strength and temperature, with the production of an unstable compound, alkali cellulose. Steeping is carried out in cast iron tanks, the period of immersion depending on a number of conditions. When the immersion is finished the caustic soda is run off and hydraulic rams are set in motion, pushing the pulp and plates in front of it. When a pressure of 100 kg. per sq. cm. has been attained the pressure is released, and the sheets of cellulose are dropped into a bogie placed underneath the end of the press.

The cellulose sheets, impregnated with caustic soda, are tipped into kneading machines, which grind them into a flocculent mass. The kneading machine can be tilted and the alkali cellulose can be discharged into iron drums, which are subsequently closed with loose covers. The contents of the receptacles are stored for several days, and the room is kept at a constant temperature. During this time the alkali cellulose matures. Chemical changes occur, causing a reduction in the viscosity of the final viscose. An increase in maturing temperature and lengthening of maturing time contribute to a lower viscosity. By altering these factors a viscose of any desired degree of viscosity can be obtained.

Preparation of Cellulose Xanthate

After maturing, the alkali cellulose is transferred to a churn provided with a hollow trunnion, through which carbon disulphide can be introduced from a constant measuring vessel. The proper quantity of carbon disulphide is introduced, and the reaction allowed to proceed to completion thus:—

$$C_6H_9O_4.ONa + CS_2 = O(C_6H_9O_4)C.SNa \parallel S$$

Alkali cellulose + Carbon disulphide = Cellulose xanthate.

During the reaction the colour changes from white to light yellow, to dark yellow, and finally to orange. At this stage the reaction is stopped by withdrawing the excess carbon disulphide, and the cellulose xanthate formed is transferred to a mixer in which it is dissolved in weak caustic soda solution. To facilitate dissolution, the gelatinous cellulose xanthate is circulated by a pump from the bottom of the mixer to the top. Fixed vanes operating in the mixer also aid dissolution. The mixer is jacketed, and it is usual for a cooled brine solution to be supplied, so as to control the temperature.

Filtration is effected in filter presses, gangee tissue being used to remove the fine particles of solid matter which would otherwise block the minute holes of the spinning jets. The filtered viscose is stored for several days in vessels maintained at a constant temperature. A chemical change occurs during this ripening process, rendering the cellulose more easily precipitable.

The Spinning Process

When ready for spinning, the viscose passes through special pumps, designed to avoid pulsations, through a final filter, and thence to the spinning jets. These may consist of platinum or a platinum alloy, or glass, and are pierced with a number of holes (each of about 0·1 mm. diameter) corresponding to the number of filaments required in a single thread. Each jet is carried on an arm, which can be made to dip under the liquor in the spinning bath, so that as these streams of liquid emerge from the jets they are immediately solidified by the action of the coagulating agent.

In commencing the spinning operation the solid filaments produced at the jet are picked up in a bunch by the hand, passed over a glass guide, serving to keep all the filaments from one jet together, then over a rotating glass wheel, and finally washed down a glass funnel into a rotating box. Centrifugal force imparts a tension to the thread, drawing it over a rotating roller, and away from the jet continuously as produced. The spinning is continued until a sufficient quantity of silk has been deposited in the box, when the thread is broken for a few moments while the box is replaced by an empty one. The spinning bath consists of an aqueous solution of sulphuric acid, containing by weight 8–11 per cent. of H_2SO_4, and 10–20 per cent. of Na_2SO_4, and some manufacturers use, in addition, varying quantities of glucose, magnesium sulphate, zinc sulphate, or ammonium sulphate.

From a mechanical standpoint the most essential characteristic of the spinning machine is that the speeds of the pumps, the glass rollers, and the centrifugal boxes should remain constant, or if they vary, the variation should be in like proportion. Viscose, from a chemical point of view, must be constant in composition, and the viscosity must vary only within narrow limits.

Washing and Final Treatment

Cakes of silk are removed from the boxes and transferred to a damping chamber, where they remain for several hours in an atmosphere saturated with steam. The cakes are then removed to the reeling frames for the silk to be wound into hank form. The hanks are placed on aluminium rods, which are fed to one end of the washing machine. The rods carrying the hanks are carried automatically from one end of the machine to the other, and during transit they are sprayed with hot water, which washes out any residual sulphuric acid, sodium sulphate, or other salts. As the bars come from the delivery end of the machine they are placed on stretching frames, where tension is put upon the silk. The stretching frames, with their complement of silk, are wheeled into the drying oven, where the silk is dried, still under tension.

The silk, when dried, is brown in colour, and harsh, and contains sulphur formed in the spinning process. Hanks are fed on ebonite-covered rods to a machine similar in construction to the washing machine. The rods carry the silk from one end of the machine to the other, and during its progress it is sprayed in succession with (1) a solution of sodium sulphide, to remove sulphur; (2) water, to remove sodium sulphide; (3) leach liquor, to improve the colour of the silk; (4) dilute hydrochloric acid, to improve the colour further;

(5) water, to remove hydrochloric acid; and, finally, with a solution of soap, to produce a soft touch.

Discussion

An interesting discussion followed the delivery of the address. Artificial silk does not maintain the heat of the body in the same way that natural silk does, and information was sought on this point. Mr. Clotworthy indicated that attempts had been made to obtain porous filaments and to deflate them. Even after the deflation process, sufficient air remained to serve as an insulating medium, and thus to maintain body heat. It was in this direction that efforts were being made to overcome one of the objections to artificial silk. He suggested that the artificial silks made by the viscose, Chardonnet, and cuprammonium processes were practically as warm as cotton.

In answer to another query, the lecturer said that the carbon disulphide used in the process must be redistilled and must be perfectly water-white. There must be no free sulphur, and no residue on evaporation. Whether mercaptans were present Mr. Clotworthy could not say.

Questioned as to the best type of artificial silk to be used in a country like India, where the humidity of the atmosphere was not only exceptional, but where the tendency to perspiration was considerable, Mr. Clotworthy replied in general terms to the effect that increased humidification over and above 10–12 per cent. would cause weakening of almost any artificial silk except that produced by the cellulose acetate process, which was partially waterproof.

Dr. Ormandy said that although it had been remarked that the chemistry underlying the manufacture of artificial silk was comparatively simple, the chemistry of colloidal substances, of which artificial silk was a notable example, was *never* simple. It was next to impossible to determine with exactitude what was going on. He asked if any precaution were taken to avoid the creation of bubbles, and suspected that trouble in this connection would arise by reason of the agitation which took place at certain stages of the process in the manufacture of viscose silk. Was there any greater strength obtained by twist? Why had the silk trade not kept to the same standards as the cotton trade? Was there any knowledge as to the molecular size or any information bearing upon the molecular aggregation that resulted from the cellulose molecule, and the amount of precipitate formed? He also raised questions about the parchmentising and mercerising of artificial silk. Could artificial silk be manufactured in as fine a form as the natural silk produced by the silk-worm?

The Purpose of Twist

Mr. Clotworthy, in reply, said that the artificial silk produced by the cuprammonium process was a finer silk than natural silk. Any trouble due to the formation of bubbles could be overcome by putting the solutions under vacuum. The twist varied very largely, according to the purpose for which the artificial silk was intended to be used. It was usual to have 2½ to 3 turns per inch. Invariably there were 4 to 5 turns for warps. Twist as applying to cotton was an entirely different proposition. In the case of artificial silk the object of twist was rather to secure a more compact thread than to obtain increased strength. He explained that from a determination of the amount of combined sulphur certain conclusions could be reached concerning the ageing of silk and other of its properties. He regretted that he could not enlighten the meeting on the subject of artificial wool, about which Dr. Ormandy had raised certain questions.

As regards the parchmentising of artificial silk, if it were treated with sulphuric acid, the fibres would swell and adhere before anything really practicable could be done. The tendency latterly had been to reduce the sheen of artificial silk. This was occasionally effected by treatment with barium chloride and immersion in sulphuric acid. Barium sulphate was precipitated within the fabric, and a duller property imparted.

Asked whether the use of soap was actually to give a softer touch, or whether it was employed to give weight, Mr. Clotworthy still adhered to his original statement, although it was not inconceivable that a certain weight was also simultaneously imparted. It was suggested that a similar objection could be raised to the precipitation of barium sulphate within the fabric. While it was correct to say that a duller effect would be given, the presence of barium sulphate would undoubtedly add to the weight of the artificial silk.

Water, Bleaching, etc.

Other points raised by various speakers elicited the information that it was desirable to use zero hardness water. The presence of iron was to be deprecated on the ground that it would develop irregularities during dyeing and might conceivably cause stains. The bleaching agents invariably used were hydrogen peroxide and sodium hypochlorite. The yield of cellulose from a unit weight of wood pulp was dependent on the alpha-cellulose content. When wood pulp was treated with caustic soda it was found that the beta- and gamma-celluloses were lost, and that the production of alpha-cellulose was of the order of 80 per cent. Cellulose acetate was no more inflammable than the other varieties of artificial silk.

Dr. Bush asked what steps were taken to avoid discomfort to the operatives, due to the presence of carbon disulphide and hydrogen sulphide vapours. In replying, Mr. Clotworthy said that efficient ventilation was imperative, otherwise the eyes of the operatives were affected. Whether this was due to carbon disulphide vapours or to hydrogen sulphide, or to an infinitely fine acid spray, it was impossible to say.

Mr. Francis H. Carr (president of the Society of Chemical Industry), Dr. W. Cullen, and Professor E. C. Williams in turn reminded the meeting that the artificial silk processes of which so much had been heard that night would never have been possible but for the painstaking and indefatigable efforts of such men as Cross, Bevan, and Beadle, who years ago undertook fundamental research work concerning the properties of cellulose. Without a knowledge of the chemistry of the subject processes of the character in question could never have been evolved. While it was fitting that the work of the chemical engineer should be recognised, it was no less necessary that one should remember the unobtrusive work of those who had made the developments in question possible.

Both as regards the lecture and the replies to questions, there was unanimity of opinion that Mr. Clotworthy had dealt with the subject in an interesting and entertaining way, and a vote of thanks to him was carried with acclamation.

Large Frauds on the I.G.

THE Leuna works of the I.G., between Halle and Merseburg, which were built during the war to supply Germany with nitrogenous fertilisers, and which are now of interest as the scene of the first large-scale manufacture of synthetic benzine, have been victimised by a fraud. The sum actually misappropriated is said to have been at least the equivalent of £125,000, and probably much more. The chief beneficiary seems to have been a contractor employed by the building department, which by itself has for some years found work for thousands of hands. By some arrangement with the officials of the concern, this man contrived to get passed without challenge all the bills which he sent in. When the fraud was discovered, he had already pocketed fifteen times the amount actually due to him. An employee of the works who got wind of the irregularities, and reported them, was dismissed for his pains. In connection with this affair, the director, Schoenberger, who is described as having been the real builder of the famous establishment, has been removed from his post.

New Propaganda in Industry

UNDER the title of *The New Propaganda in Industry: Its Nature and Practice*, the Technical Advertising Service (Fitzalan House, Arundel Street, London) has published an attractive and striking volume expounding and illustrating the practice of "scientific, industrial, trade and agricultural publicity." The definitely modernist and yet slightly severe spirit of the design gives a touch of distinction to the production, and the letterpress, with its dainty line drawings, sets out picturesquely but clearly the modern science of publicity and the advantages of entrusting this work to expert hands, if the best results are to be attained. The founders of the service (Mr. Bertram Ward and Mr. W. K. Crampton Clark) took the view a few years back that the urgent need of British industry—especially scientific and technical industry—was a propaganda service of new vision, directed throughout by a technologist from the technologist's point of view, and they already appear to have brought a useful service to the aid of industrial propaganda. The volume itself attractively illustrates the spirit of the service they offer.

Chemical Trade Returns for December

Large Increase of Exports

THE Board of Trade Returns for December indicate that imports of chemicals, drugs, dyes and colours during the month ended December 31, 1927, amounted in value to £1,478,631, an increase of £95,579 on 1926 and £164,579 on 1925; exports were valued at £2,032,660, an increase of £591,659 on 1926 and of £267,826 on 1925; and exports of imported merchandise at £74,417, an increase of £5,133 on 1926 and a decrease of £27,043 on 1925. For the year ended December 31, 1927, imports were valued at £15,469,485, an increase of £20,787 on 1926 and of £1,082,992 on 1925; exports were valued at £23,438,235, an increase of £1,778,519 on 1926 and a decrease of £186,967 on 1925; and exports of imported merchandise at £1,021,214, an increase of £28,080 on 1926 and a decrease of £198,758 on 1925. The detailed returns are as follows:—

Imports

	Quantities. Month ended December 31, 1926.	Quantities. Month ended December 31, 1927.	Value. Month ended December 31. 1926. £	Value. Month ended December 31. 1927. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic ..... tons	1,216	1,593	49,432	73,796
Acid Tartaric .... cwt.	2,284	1,013	11,041	4,920
Bleaching Materials.. ,,	10,707	15,705	10,912	12,709
Borax..... ,,	720	20,568	792	15,080
Calcium Carbide... ,,	80,023	110,760	52,468	63,389
Coal Tar Products, not elsewhere specified value	—	—	201,771	115,404
Glycerine, Crude ..cwt.	—	786	—	2,703
Glycerine, Distilled ,,	40	382	150	1,749
Red Lead and Orange Lead ..... cwt.	3,671	5,218	6,551	8,017
Nickel Oxide..... ,,	—	—	—	—
Potassium Nitrate (Saltpetre) .....cwt.	9,718	21,527	11,038	22,027
Other Potassium Compounds .....cwt.	476,048	496,640	124,765	127,452
Sodium Nitrate ... ,,	52,810	115,356	31,870	63,674
Other Sodium Compounds .....cwt.	63,246	52,693	44,618	34,485
Tartar, Cream of .. ,,	3,092	3,547	12,118	16,707
Zinc Oxide .....tons	960	837	34,686	26,653
All other Sorts ...value	—	—	284,518	285,356
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	171,002	164,172	13,202	11,269
Bark Cinchona, etc. cwt.	2,282	1,364	9,400	4,810
Other Sorts.....value	—	—	127,066	184,396
DYES & DYESTUFFS, ETC.—				
Intermediate Coal Tar Products .....cwt.	34	292	485	2,575
Alizarine ..... ,,	39	202	3,580	4,655
Indigo, Synthetic.. ,,	—	—	—	—
Other Dyestuffs .. ,,	2,883	3,445	75,667	85,816
Cutch ..... ,,	3,033	4,990	4,392	8,292
Other dyeing extracts ,,	4,948	2,808	15,443	7,979
Indigo, Natural ... ,,	—	20	—	545
Extracts for tanning ,,	104,867	124,187	98,740	139,790
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground, and Blanc Fixe .....cwt.	63,291	64,648	15,478	14,403
White Lead (dry).. ,,	11,472	11,242	21,504	15,485
Other Sorts ..... ,,	83,254	83,424	120,765	124,495
Total of Chemicals, Drugs, Dyes, and Colours .....value	—	—	1,383,052	1,478,631

Exports

CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric ....cwt.	2,393	2,051	2,498	2,038
Acid Tartaric, including Tartrates, not elsewhere specified ..cwt.	1,206	1,708	6,313	11,282
Ammonium Chloride (Muriate) .....tons	191	358	4,373	7,808
Ammonium Sulphate—				
To France .....tons	—	—	—	—
,, Spain and Canaries tons	272	1,088	3,035	10,704
,, Italy..... ,,	292	909	3,407	8,803
,, Dutch East Indies tons	—	4,751	—	54,262
,, Japan..... ,,	1,394	9,516	16,228	94,343
,, British West India Islands and British Guiana tons	—	700	—	6,975
,, Other Countries ,,	2,813	9,249	32,007	91,711
Total ..... ,,	4,771	26,213	54,677	266,798

	Quantities Month ended December 31, 1926.	Quantities Month ended December 31, 1927.	Value. Month ended December 31, 1926. £	Value. Month ended December 31, 1927. £
Bleaching Powder (Chloride of Lime) ....cwt.	52,461	71,405	20,605	26,908
COAL TAR PRODUCTS—				
Anthracene .....cwt.	1,000	—	500	—
Benzol and Toluol galls.	393	676,081	41	35,583
Carbolic Acid .....cwt.	11,128	17,284	20,999	27,636
Naphtha .....galls.	1,779	5,127	279	319
Naphthalene .....cwt.	140	1,289	151	905
Tar Oil, Creosote Oil, etc. .....galls.	660,623	5,831,022	21,781	211,811
Other Sorts .....cwts.	62,945	30,264	23,556	21,476
Total ...value	—	—	67,307	297,730
COPPER, Sulphate of, tons	924	2,685	19,744	56,401
DISINFECTANTS, ETC. cwt.	29,779	33,824	74,062	83,634
GLYCERINE, Crude... ,,	1,789	1,088	6,010	2,808
Glycerine, Distilled .. ,,	16,965	8,879	84,415	38,872
Total .... ,,	18,754	9,967	90,425	41,680
POTASSIUM COMPOUNDS—				
Chromate and Bichromate .....cwt.	1,946	2,950	3,421	5,253
Nitrate (Saltpetre). ,,	1,513	1,518	2,864	2,866
Other Sorts ..... ,,	2,067	2,099	10,081	15,578
Total .... ,,	5,526	6,567	16,366	23,697
SODIUM COMPOUNDS—				
Carbonate .....cwt.	289,085	340,793	91,291	102,660
Caustic..... ,,	96,683	155,306	75,350	109,930
Chromate and Bichromate .....cwt.	936	2,437	1,472	3,270
Sulphate ..... ,,	80,868	114,211	12,035	16,418
Other Sorts ..... ,,	33,644	57,932	40,262	56,846
Total .... ,,	501,216	670,679	220,410	289,124
ZINC OXIDE .....tons	41	91	1,921	3,794
All other Sorts ....value.	—	—	—	—
Total of Chemical Manufactures value	—	—	843,754	1,402,904
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	183,345	130,526	18,097	12,634
Other Sorts.....value	—	—	242,818	256,448
Total .... ,,	—	—	260,915	269,082
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	4,675	6,713	43,900	56,012
Other Sorts ..... ,,	7,596	8,810	8,178	8,035
Total .... ,,	12,271	15,532	52,078	64,047
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground, and Blanc Fixe.....cwt.	9,493	545	3,709	340
White Lead (dry).. ,,	2,827	6,210	5,818	10,037
Paints and Colours in Paste form .....cwt.	45,284	45,336	100,052	91,443
Paints and Enamels Prepared .....cwt.	27,774	35,245	86,920	111,104
Other Sorts ..... ,,	44,705	42,585	87,755	83,703
Total .... ,,	130,083	129,921	284,254	296,627
Total of Chemicals, Drugs, Dyes and Colours ....value	—	—	1,441,001	2,032,660

Re-exports

	Quantities. Month ended December 31, 1926.	1927.	Value. Month ended December 31, 1926. £	1927. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Tartaric .....cwt.	73	82	485	617
Borax..... ,,	2,023	170	3,233	141
Coal Tar Products value	—	—	492	840
Glycerine, Crude ...cwt.	—	—	2	—
Glycerine, Distilled ,,	—	—	—	—
Potassium Nitrate (Saltpetre) .....cwt.	50	155	77	272
Sodium Nitrate ... ,,	152	1,052	90	637
Tartar, Cream of .. ,,	777	275	3,081	1,374
Other Sorts .....value	—	—	10,481	12,001
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	8,773	32,366	1,169	2,946
Bark Cinchona, etc. cwt.	82	146	498	667
Other Sorts.....value	—	—	38,823	40,958
DYES AND DYESTUFFS, ETC.—				
Cutch .....cwt.	676	1,908	1,006	2,772
Other Dyeing Extracts cwt.	73	301	708	2,211
Indigo, Natural .. ,,	19	5	459	142
Extracts for Tanning cwt.	436	1,384	898	1,885
PAINTERS' COLOURS AND MATERIALS.....cwt.	1,220	861	5,270	3,927
Total of Chemicals, Dyes, Drugs and Colours .....value	—	—	69,284	74,417

Petroleum Refining

Dr. Dunstan on Natural Gas

DR. A. E. DUNSTAN, of the Anglo-Persian Oil Co., delivered before the Royal Society of Arts, in London, on Monday, the first of three Cantor Lectures dealing with the outstanding lines of activity in regard to petroleum and its products.

Dr. Dunstan discussed the three methods by which the extraction of the liquid hydrocarbons from wet gas could be achieved. The original method was the compression method, in which the liquefiable contents were separated by subjecting the gas to high pressure. The second method was that of absorption, in which the natural gas was passed through absorbing media, as, for example, ordinary gas oil. In the last year or two a third process had been developed, particularly in the United States and in Roumania, *i.e.*, the method in which the liquid hydrocarbons were recovered from the gas by adsorption in the pores of activated charcoal.

If one extracted all the liquid components from the natural gas, there arose the question of what was to happen to the material which so far had not been touched—the methane, ethane, and propane. In this connection, a new synthetic chemistry was arising, based on petroleum. For a hundred years they had been familiar with the synthetic chemistry of coal tar, but there was a corresponding chemistry appertaining to mineral oil, and a study of current journals indicated that this aspect of the subject was being very seriously considered. A host of patents were being taken out from time to time dealing with the chlorination of components of the gas.

Aromatic Hydrocarbons for Natural Gas

If one passed methane, ethane, propane or butane through tubes at temperatures ranging from 700° to 1,000° C., one obtained benzol. If natural gas, denuded of its gasolene, were passed through tubes heated to between 800° and 900° C., one obtained about a quarter of the possible ethane in the form of condensable products, of which benzol and naphthalene formed a large part. If one had pure ethane at 800° C., a large proportion of it could be converted into aromatic hydrocarbons.

Dealing with further aspects of the utilisation of natural gas, Dr. Dunstan said that the major part of it was methane, and at the present time a good deal of methane was utilised by burning it under conditions of incomplete combustion, so that amorphous carbon, or lampblack, was obtained.

The next two lectures will be delivered before the Society of Arts on January 23 and 30.

Proposed Duty on Calcium Biphosphate

Inquiry Under Safeguarding Act

A COMPLAINT that calcium biphosphate (of baking powder quality) had been improperly excluded from the list of articles chargeable with duty under Part I of the Safeguarding of Industries Act was the subject of an inquiry which opened at the Board of Trade Offices, Westminster, on Tuesday, before a committee appointed by the Board, and consisting of Mr. A. A. Hudson, K.C. (the Referee), Professor F. G. Donnan, F.R.S., and Professor J. F. Thorpe, F.R.S. The complaint was made by A. Boake, Roberts and Co., Ltd., supported by the Association of British Chemical Manufacturers, and Messrs. Albright and Wilson, and it was asked that the substance in question be included in the list. There was opposition by the British Chemical and Dyestuffs Traders' Association, Ltd., Chas. Page and Co., Ltd., and David T. Boyd and Co., Ltd. The complainants were represented by Sir Arthur Colefax, K.C., and the Hon. Stafford Cripps, K.C.; the opponents were represented by Mr. James Whitehead, K.C., Mr. Kenneth Swan, and Mr. R. J. Parry. Mr. Trevor Watson appeared for the Board of Trade.

Sir Arthur Colefax said calcium biphosphate of baking powder quality was actually in the first Board of Trade list published in 1921, but it was excluded from the 1925 list. He believed the deletion was made after a referee had reached a decision regarding other chemical substances. The substance was mainly an element in the composition of many baking powders. It was also used as an improver of ordinary flour.

The opponents were not concerned with the protection of the fine chemical manufacturers of this country. They were merchants and dealers, and largely imported from the United States of America. They denied that it was a fine chemical within the meaning of the schedule, holding that it was a typical commercial or general chemical employed for industrial uses.

Dr. Albert Humphries, giving evidence on behalf of the National Association of British and Irish Millers, said that as a practical miller he regarded calcium biphosphate as a fine chemical because of the necessity for its extreme purity. It was used in the manufacture of self-raising flour and as an "improver" in the manufacture of ordinary flour.

A Fine Chemical?

Mr. A. E. Berry, a director of Boake, Roberts and Co., Ltd., said the firm manufactured fine chemicals, and they had a special brand of calcium biphosphate. In 1919 they ceased production of the substance because imports were being sold at prices which made it unprofitable. They restarted in 1927, and were now producing. The calcium biphosphate was made in the same department of the works as other phosphates which were in the schedule as fine chemicals.

In the course of cross-examination, Mr. Whitehead, K.C. (for the opponents), pointed out that the laboratory type of calcium biphosphate cost about 4s. or 5s. per lb., whereas the baking powder quality cost about 3d. or 4d. per lb., and he put a number of questions behind which was the suggestion that as the latter was so much cheaper, and consequently so much less pure than the former, it was not a fine chemical. Mr. Berry would not agree. He was not aware that the laboratory quality was sometimes made by purifying the baking powder quality, as suggested by counsel. Another point to which counsel drew attention was that Boake, Roberts and Co., in their advertisements, listed calcium biphosphate under the heading of "phosphates" and not under "fine chemicals," and he drew from that the inference that until the passing of the Safeguarding of Industries Act the company had not regarded calcium biphosphate as a fine chemical. With this witness disagreed, and said that they had always regarded it as a fine chemical.

The hearing was still in progress on Thursday.

Carbonisation in Vertical Retorts

WE have received a copy of "Carbonisation in Vertical Retorts," a paper by Mr. T. Campbell Finlayson, of the Research Department of the Woodall-Duckham Companies, being a paper which was presented to the London and Southern District Junior Gas Association, describing Woodall-Duckham vertical retorts in gas works in different parts of the country.

Zinc Oxide

Notes On Its Manufacture

A MEETING of the Oil and Colour Chemists' Association was held at the Institute of Chemistry, London, on Thursday, January 12, Mr. C. A. Klein, president, in the chair.

Mr. R. G. Daniels read a paper entitled "Some Notes on the Manufacture of Zinc Oxide," describing in some detail the work done when he was actually engaged in the manufacture of zinc oxide.

His first experience was in the manufacture of indirect oxide. Spelter was placed into large plumbago crucibles holding about 5 cwt. of metal. Each crucible was heated by its own small furnace, the furnace being fed with foundry coke and forced blast being supplied. Each furnace was separated from the next by a fire brick wall and they were arranged in batches of eight with one man to control the furnaces and another to feed the pots and attend to them generally. The crucibles containing the zinc were fitted with tapered covers luted on with fireclay and so arranged that the zinc vapours were passed to a chamber (itself heated by a part of the furnace flues) where combustion took place. These chambers had one side open to the air to allow free admission of plenty of oxygen, and the tops were fitted with exhaust pipes connected through a series of pipes to a fan and ultimately to the collecting bags. Such a plant made good quality oxide and gave little or no trouble so long as a very pure electrolytic spelter guaranteed to contain 99·95 per cent. of zinc was used, but from the start its economic efficiency was poor.

Utilising the Heat of Oxidation

It was thought that it might be possible to use the heat principle of the Bessemer converter for the process of zinc oxide production, *i.e.*, that the heat of oxidation should be sufficient to volatilise the zinc and also maintain a molten condition. A converter consisting of a steel cylindrical shell lined with fire brick was mounted on trunnions, the trunnions being made hollow to admit of the introduction of producer gas if it was found that extra heat was necessary, and also to admit auxiliary air if it was found that the tuyeres would not pass sufficient air for the oxidation. A set of tuyeres was provided at the back, and a large vent provided diametrically opposite these tuyeres, being so arranged that when the converter was running it sent the products into a hood, which in turn was extracted by a fan leading to the bag house. This process had considerable possibilities.

Scientific Training for Industry

Professor W. A. Bone's Views

PROFESSOR W. A. BONE, addressing the recently held Science Masters' Conference at the Imperial College of Science, said it was not sufficiently realised how necessary it was to readjust methods owing to the changing conditions in industry. There was abundant evidence that industrial combinations and amalgamations were to be the order in many of our greatest industries, and the small firm would have to take shelter within one of these larger groups, which were being more closely organised than ever. The changing conditions, he suggested, meant an increasing need in every direction of industry for scientific control and direction, not merely in the actual manufacturing operation.

There was not a British industry that did not require the aid of science in an increasing degree. Therefore, there should be no lack of openings and opportunities for properly trained men. They wanted the leadership of people who understood the scientific method and appreciated the value of modern scientific discovery. There should be some definite method of selecting, recruiting and training men in educational institutions, and the big industrial organisations would have to take part. As to qualifications, they should have the very best men, and he suggested seven years as a period of training—from 18 to 25 years. Students, after leaving college, should have six months at a works. Six months of foreign travel should also be included in any training scheme, which ought to be financed by the industries themselves.

Replying to a question, Professor Bone stated that he considered that the salaries offered to men going into industry were quite inadequate.

"Protected Price" System Challenged

A JUDGMENT of some importance (which, possibly, may be the subject of appeal) affecting the "protected price" system, was given by Mr. Justice Avory in the High Court on Tuesday. The plaintiffs, Hardy and Lane, Ltd., motor dealers, London, claimed £132 from three officials of the Motor Trade Association as damages for alleged conspiracy and misrepresentation.

The Motor Trade Association rules forbid the sale of certain articles at a price above or below the "protected price." Persons who break the rules can be put on the "stop list," in which case other members are forbidden to deal with them. The plaintiffs' case was that in January, 1926, a man named Neale, employed by the Association, called on them, represented that he was an old customer, and that he wanted a motor-car, but could barely afford to pay for it, and asked for a discount. The plaintiffs refused to give him a discount, but they agreed not to charge him for delivery, to pay a year's tax for him, and to give him some number plates. In March, 1926, they were charged by the Association with having sold the motor-car at less than the proper price by the amount of the allowances. Later, they were told that the "stop list" committee had found the charges proved, but that the matter might be ended by their paying £200 to the indemnity fund of the Association and signing an undertaking. Fearing that the only alternative was to be put on the "stop list" the plaintiffs paid £100 on account to the Association, and £7 to advertise their undertaking, and they also bought back the motor-car, which they afterwards resold at a loss of £25. The plaintiffs complained that the Association had no right to fine them, and that they had suffered damage through being influenced by the threats of the defendants. The defendants denied that there had been any conspiracy or any misrepresentation.

Without leaving the witness box, the jury returned a verdict for the plaintiffs. Judgment for £132, with costs, was entered accordingly. A stay of execution was granted.

Thefts at Phosphoric Acid Makers' Works

Clues Found by Chemical Analysis

AT the Worcestershire Quarter Sessions on Monday, January 2, Foster Merritt Reeves, aged 33, and Frederick William Stanley, aged 27, steeplejacks, were charged with stealing lead to the value of £69 4s. 8d., the property of Albright and Wilson, Ltd., chemical manufacturers, Oldbury. Alfred Edmonds Booker, aged 53, old metal dealer, was charged with receiving a quantity of the lead. Mr. J. B. Matthews, K.C., prosecuting, said that the stolen material was said to have been taken from the phosphoric acid department, while Reeves and Stanley were working, for a firm of steeplejacks, at the chemical works. Some of the materials had a unique deposit on them and a detective thought that the steeplejack's lorry would bear traces of this. Dust and dirt, gathered and analysed, contained traces of the deposit. The allegation was that the lead was conveyed to Booker's premises. Mr. P. W. Knight, chemist at Albright and Wilson's, said he was given an envelope containing dirt from Booker's yard. He analysed a portion of it and found that it contained the characteristic deposit which had been referred to. Booker was found guilty of "receiving," and was sentenced to 12 months' imprisonment in the second division and ordered to pay £50 towards the cost of the prosecution. Reeves, whose previous character was excellent, was bound over for 12 months, and Stanley was found not guilty.

I.G. Issue of Convertible Bonds

SANCTION for the issue of convertible bonds to the value of 250 million marks, carrying interest of at least 6 per cent., has been made at an I.G. meeting Reports made at the meeting on the progress of the production of artificial silk by the I.G., indicated that among German producers it now ranks second. The daily output of viscose at the Wolfen works is 5,000 kg., and the erection of three other factories (now under way) would bring the daily production up to 20,000 kg. At present the production of acetate silk is 2,000 kg. per day, but it is to be increased to 5,000 kg.

Society of Public Analysts

Report on the Determination of Preservatives

An ordinary meeting of the Society of Public Analysts was held at the Institute of Chemistry on Wednesday, January 11, the President (Mr. E. Richards Bolton) in the chair.

Certificates were read for the first time in favour of A. R. Buchanan and A. G. Francis, B.Sc., F.I.C.; and for the second time in favour of G. R. Barnes, B.Sc., C. A. Bassett, B.Sc., A.I.C., E. I. Beeching, M.Sc., A.I.C., H. P. Buttrick, A.I.C., C. O. Harvey, B.Sc., A.R.C.S., A.I.C., H. V. Horton, B.Sc., A.I.C., T. Howard, M.Sc., A.I.C., H. McK. Langton, M.A., B.Sc., A.I.C., W. A. N. Markwell, W. G. Messenger, B.Sc., A.I.C., E. J. Newby, B.Sc., H. S. Rooke, M.Sc., A.I.C., S. Sera, C. T. Symons, B.A., F.I.C., D. R. Thomas, M.B., Ch.B., and W. A. Whitley.

The following were elected members: A. H. Bateman, B.Sc., A.I.C., A. O. Blackhurst, M.D., W. Clayton, D.Sc., F.I.C., C. W. Cornwell, B.Sc., A.I.C., and T. Riley, A.I.C.

Mr. J. R. Nicholls read a paper on the "Determination of small quantities of Benzoic Acid and Cinnamic Acid, with some notes on the Colorimetric Determination of Salicylic Acid." A colorimetric method of determining benzoic acid was based on its partial oxidation, in a constant proportion, to salicylic acid by means of hydrogen peroxide in the presence of ferric chloride, and colorimetric determination of the salicylic acid under specified conditions. Cinnamic acid might be determined by first oxidising it quantitatively to benzoic acid.

Determination of Sulphur Dioxide in Foods

The report of the preservatives determination committee of the chemists of the manufacturing confectioners' alliance and of the food manufacturers' federation, on the determination of sulphur dioxide in foods, was read by Mr. L. E. Campbell, who stated that a normal procedure and an apparatus for the determination of sulphur dioxide in foods had been devised. Details of standard volumetric and gravimetric determination were given, together with details of the treatment required in certain special cases, such as starch, gelatin, meats, dried fruits, etc. Seven papers dealing with special aspects of the problem were then read.

William Gardner and Sons: Works Dinner

On Wednesday, January 4, the staff and employees of Wm. Gardner and Sons (Gloucester), Ltd., were entertained to dinner at the Mercers' Hall, Gloucester. Mr. C. E. Gardner (chairman of the directors) presided over an attendance of about 100, and amongst those supporting him were Mrs. Gardner, Mr. F. Gardner (director), Mr. D. G. Price (director and secretary) and Mrs. Price, and Mr. S. Hibbs (works manager). The chairman, after extending seasonable greetings to the company on behalf of himself and of his co-directors, heartily welcomed the guests, and proceeding said, as most of them were aware, some two years ago he was faced with a very difficult problem in connection with their business. He was referring to the period when his brother, Mr. Alfred Gardner, who was a co-director, retired from the firm. It had meant the reorganisation of some of the departments, but he was glad to say that, owing to the loyalty of the various employees, they had been able to surmount the difficulty. There was hardly anything now that they sold which was not produced under their own roof, with the exception, of course, of the raw materials for their manufacture. They had also seen the great advantage of that in quicker output, and they were now considerably increasing the floor space in the foundry, that being the third extension they had made. They were hoping to develop before long other ideas and departments, through which they looked forward to being able to increase the number of the employees.

After the dinner a musical programme was given.

The Hexyl Resorcinol Patent Action

The hearing of the appeal by Sharpe and Dohme, Inc., against the decision of Mr. Justice Astbury in their action against Boots Pure Drug Co., Ltd., was continued in the Appeal Court on Thursday, when Sir Arthur Colefax, K.C., reached the eighth day of his opening speech, and continued his analysis of the evidence given by Dr. Oberlander before the lower court.

A Runcorn Inventor's Death

Mr. William Edgar Lea, formerly of Runcorn, whose death at Prestatyn is announced in his 79th year, had many inventions to his credit, especially in connection with oxygen extraction from the air.

Mr. Lea was early interested in photography. He made his own camera and his own photographic plates in 1869, and soon after made slides and showed them by projection with the optical magic lantern. Later he used oxygen and hydrogen for limelight, the gas being in wedge-shaped rubber bags, with boards and weights, to give the desired pressure. In later years in the oxygen world he collaborated with the late Mr. J. H. Parkinson, who took out what is believed to be the first patent for the separation of oxygen from the atmosphere by the liquid air process. After Mr. Parkinson's death at an early age, Mr. Lea continued to experiment with oxygen manufacture, and ultimately erected at Runcorn a large-scale successful oxygen-producing and compressing plant upon a full commercial works scale. He designed, invented, and manufactured at his own engineering works the whole plant, including compressors, gas cylinders, valves, etc. This plant began supplying commercially in August, 1899, the chief uses in those days being for limelight and medical purposes. This plant at Runcorn has formed the basis of the present oxygen works, which have been developed by his two sons, Mr. E. S. Lea and Mr. F. R. Lea, and kept up to date with all the latest plant, processes, and machinery.

The Individualist Movement

The twelfth monthly luncheon of the Individualist Bookshop was given on Tuesday, at the Hotel Cecil, London, under the chairmanship of Sir Donald Maclean, who, in opening the proceedings, stated that if he had his way, in finding suitable words for adorning the portals of all public institutions which took on the duty of managing other people's affairs, he would suggest the words from John Stuart Mill's essay on "Liberty": "There is a limit to the legitimate interference of collective opinion with individual freedom. To find that limit and maintain it against encroachment is as indispensable to a good condition of human affairs as protection against political despotism."

Mr. R. D. Holt, shipowner and chairman of the Mersey Docks and Harbour Board, who was the chief guest, protested against the dangers of protective legislation being carried too far. "I have not the slightest desire," he said, "to see a world in which the fool is completely protected against all the consequences of his folly." The whole class of regulations relating to selling to the public could be ingeniously turned into regulations to prevent the public from buying a better and cheaper article than the regulators thought fit to produce for themselves.

Mr. H. Vivian proposed the toast of "The Individualist Bookshop" and Sir Daniel Keymer responded. The toast of "The Chairman" was proposed by Sir Ernest Benn, who gave examples of the wasteful methods of municipal control.

Chemistry of Bread and Flour

At a meeting of the Society of Chemical Industry (Birmingham and Midland Section), held at the Birmingham Chamber of Commerce on Friday, January 13, Mr. W. A. S. Calder presiding, Dr. D. W. Kent-Jones, chief chemist, Woodlands, Ltd., millers, and chief examiner in bread making to the City and Guilds of London Institute, lectured on "The Chemistry of Flour and Bread Manufacture." Dealing with flour treatment, Dr. Kent-Jones said millers sometimes used chemicals or gases to bleach or improve the flour. Provided the chemicals were themselves harmless, it was difficult to see what objection progressive people could have to their employment. They were not used to conceal a fault, but to produce a definite and valuable improvement in the baking value. Dr. Kent-Jones pointed out that the chemist played a most important part in modern bread production, and the realisation of the colloidal nature of dough had been the starting point of a new field of investigation. There was a considerable field for fresh work, and milling and baking firms were availing themselves more and more of the uses of the chemist. An interesting discussion followed.

Action of Acid on Wool

A Paper Read at Nottingham

THE fourth meeting of the session of the Nottingham Section of the Society of Chemical Industry, was held jointly with the Midland Section of the Society of Dyers and Colourists on Wednesday, January 11, 1928, at University College, Mr. Hardcastle in the chair.

Dr. E. R. Trotman read a paper entitled "The Action of Acids on Wool," by S. R. Trotman, E. R. Trotman, and J. Brown. Dr. Trotman reviewed the previous work on the subject, and directed attention to factors which had apparently been overlooked by other investigators, and to which the contradictory results found in the literature might be attributed. He then described a systematic series of experiments from which the authors arrived at the following conclusions.

Factors in Action of Acid

(1) The action of acids on wool is dependent on the adsorption of the acid by the wool; which is followed subsequently by chemical reaction between the acids and the reactive groups in the wool substances.

(2) At small or moderate concentrations, the rate of reaction is governed by the rate of adsorption.

(3) When the rate of adsorption attains the order of the rate of the chemical reaction, the latter would then appear to become the governing factor in the process which ultimately results in the degradation of the protein molecule.

(4) Much of the contradictory nature of the literature on the action of acids on wool may be due to neglect in considering such variables as agitation, relative proportions of liquid and of wool surface exposed.

Sorption and Desorption of Colloids

Dr. Trotman then communicated a paper on "Sorption and Desorption by Colloids, with Special Reference to Textiles," by J. Brown. In this paper there were described experiments relating to the sorption of moisture and acids by cellulose, starch, etc., and by protein (with particular reference to cotton and wool) and derived a mathematical relationship between the factors. The author pointed out the difficulty of systematic examination, owing to volume changes resulting from osmosis. This difficulty might be overcome by expressing the results in terms of the volume-elasticity of the material, which may be directly correlated with the osmotic pressure, causing the change on volume.

Mr. T. H. Heyes then read a short note on "A Micro-Method for the Determination of the Copper Number of Cellulose."

Contract Placed for New Beet Sugar Factory

IT is stated officially that the firm of Stewart and Partners, Ltd., of London, Belfast, and Dublin, have obtained the contract, amounting to over £350,000, for the erection of a beet-sugar factory at Brigg, Lincolnshire. The factory will be capable of slicing 1,000 tons of beet per twenty-four hours, and during the three working months from October to January will be able to cope with the production of 12,000 acres of land. The designers of the factory are Hallesche Maschinesfabrik, of Halle, Saxony, who have built more than 200 sugar factories in various parts of the world. The machinery is to be of the latest design, and not less than 75 per cent. will be manufactured in this country, in accordance with Government regulations. It is expected that the factory will be completed in time for the 1928 beet crop in October.

Key Industry Duty on Chemicals

THE Board of Trade give notice that representations have been made to them under Section 10 (5) of the Finance Act, 1926, regarding acid hydrocyanic, and synthalin [deka methylene diguanidine hydrochloride]. Any person desiring to communicate with the Board of Trade with respect to the above-mentioned application should do so by letter addressed to the Principal Assistant Secretary, Industries and Manufactures Department, Board of Trade, Great George Street, S.W.1, within one month from the date of this notice, January 12.

"C.A." Queries

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

87 (*SO_2 Automatic Recorder*).—"I should be glad to know if you could give me any particulars as to suppliers of SO_2 automatic recorders."

88 (*Methylene Chloride*).—"We should be obliged if you could advise us of the names of English manufacturers of methylene chloride."

Oil and Chemical Merchant Charged with Fraud

Alleged Adulteration and Short Weight

HERBERT MARLEY CRABBE, aged 52, of 30, Beaumont Terrace, Stapleton Road, Bristol, formerly trading as the British Pure Oil, Grease, and Carbide Co., surrendered to his bail before a special sitting of the Bristol magistrates on Friday, January 13, to answer 17 charges of fraud and false pretences in connection with supplies of oil to the Millbay Laundry, Dyeing and Cleaning Co., Plymouth, and the Cornwall and Devon Oil Co., Plymouth. Crabbe was first charged at Bristol in October, 1925, and was remanded on £1,000 bail, but he disappeared for two years, returning recently from Canada to surrender to the police. The charges, involving amounts ranging only from 1s. 6d. to 2s. 9d., concerned alleged short weight of oil supplied. He was also charged with selling an adulterated oil under the name of a well-known brand.

Edgar Tipping, merchant, 78, Oxford Street, Totterdown, said he was employed by the accused in the business of the British Pure Oil, Grease, and Carbide Co. for eleven years. Witness had noticed that the tare weight on invoices to customers was less by 10 lb. than the tare stated on the importers' specifications. On the barrels was stencilled the gross weight and tare, but before being sent out again to customers all marks on both ends of the barrels were obliterated on Crabbe's instructions. Witness cited an instance in which a tare weight of 78 lb. on a warehouse note had been changed to 68 lb. Witness had received many orders from the office to blend Anglo-American oil for delivery to the Cornwall and Devon Oil Co., but frequently the oils used were not of so valuable a character as those ordered.

In consequence of complaints received a traveller of the Cornwall and Devon Oil Co. took samples of oil to be analysed, and Mr. Cox, an analytical chemist, and Mr. Walter Woodrow, chemist, of the Anglo-American Oil Co., gave evidence to the effect that samples of oil they had analysed were inferior to "Anglo" oil.

The case was adjourned for a week, Crabbe being allowed bail.

Progress of Hull University College

MR. T. R. FERENS, of Hull, has made a gift of £22,500 to the newly-established Hull University College for the endowment of a chair, the subject of which has not yet been specified. The donor's previous gifts to the college, with accumulations, are now worth considerably over £300,000, and include 18 acres of land. The college is in process of organisation. The buildings are being erected, and it is the intention of the council to open the first block for the reception of students in October. The funds, despite the generosity of Mr. Ferens and a gift from the City Council, are by no means sufficient for the running of the college, and an appeal for maintenance will be made to the public shortly.

Appointments Vacant

A Readership in Chemistry at Bedford College, University of London.—The Academic Registrar, University of London, South Kensington, London, S.W.7. February 17.

A City Analyst for Leeds.—The Town Clerk, 26, Great George Street, Leeds. January 25.

Temporary Assistant Chemists in the Government Laboratory.—The Government Chemist, Clement's Inn Passage, London, W.C.2. January 31.

From Week to Week

INTERNATIONAL PAINT AND COMPOSITIONS CO., LTD., announce that there is no truth in the rumour that the company contemplates amalgamation with other paint companies.

MAJOR T. G. TULLOCH, who with Mr. M. A. Novomeysky is expected to be granted the concession for extracting minerals from the Dead Sea, has just left London for Palestine.

A VERDICT OF ACCIDENTAL DEATH was returned at the resumed inquest last week on Frank W. Joyce, a chemical worker, of Blaby, who died following injuries received through being crushed by shafting at Krux's Chemical Works, Blaby.

A CONTRACT FOR THE SUPPLY OF 2,000,000 gallons of petrol to the Birmingham Corporation has been divided between the Anglo-American Oil Co., the British Petroleum Co., the Red Line Motor Spirit Co., the Russian Oil Products Co., and the Shell-Mex Co.

MR. J. H. P. CAMPBELL, the Cambridge "blue" who was British representative in the pole-jump at the Olympic Games in Paris, 1924, has been appointed wines chemist and works superintendent at the Winery, Kingston-on-Thames, where a new laboratory has been constructed for work in connection with the production of British-made wines.

BEET SUGAR NEWS.—Three men, John Scotcher, Cyril Thomas Stiff, and Arthur Crighton, were killed on Thursday, January 12, when a crane at the Bury St. Edmunds beet sugar factory overturned. They were pinned by the crane underneath a pile of pulp, all efforts to dig them out being unsuccessful owing to the yielding nature of the material.

THE PROBLEM OF POLLUTION of fishing waters resulting from tarred roads will be among the matters to be considered at the annual meeting of the National Association of Fishery Boards, on February 23. The Ministry of Agriculture, in a letter to the Association, point out that it is not considered practicable to publish a list of road-dressings which are absolutely harmless to fish and aquatic life.

AN INTERNATIONAL CONFERENCE on the protection of civilians against chemical warfare opened on Monday in Brussels. The conference, which lasted five days, was convened by the International Committee of the Red Cross. The work of the conference was divided into three sections: measures for collective protection; measures for individual protection; and the general co-ordination of all measures.

THE BUSINESS OF JOHN BELL AND CROYDEN, LTD., of Wigmore Street, London, W., has been acquired by Savory and Moore, Ltd. The chairman and managing director of the combined undertaking will be Mr. E. T. Neathercoat, who was president of the Pharmaceutical Society of Great Britain from 1919 to 1924. Other directors are Mr. Arthur Savory, and Mr. Ernest Umney, of Wright, Layman and Umney, Ltd.

UNIVERSITY NEWS.—*London*: Mr. H. R. Ing has been appointed lecturer in Pharmacological Chemistry at University College. Mr. Ing was an Exhibitioner, and afterwards Senior Scholar, of New College, Oxford.—Mr. R. J. Wood Le Fèvre, of East London College, has been appointed assistant lecturer in the department of chemistry. —*Cambridge*: Mr. A. Hutchinson, F.R.S., professor of mineralogy, has been elected Master of Pembroke College, Cambridge, in succession to the late Dr. W. S. Hadley.

SIR ALFRED MOND took the chair at the joint conference of employers and the general council of the Trades Union Congress held in London on Thursday, January 12. Among those who took part in the discussion were Sir Josiah Stamp and Sir David Milne-Watson. The employers have appointed, with a view to facilitating future proceedings, a committee of which Sir Alfred Mond is chairman. Among the members are Sir David Milne-Watson and Lord Ashfield, while Mr. J. Conway Davies is secretary.

DURING 1927 THERE WERE REGISTERED 8,399 companies (569 public and 7,830 private), an increase of 602 on the 1926 number, according to the annual statistical report of Messrs. Jordan and Sons, company registration agents, of Chancery Lane, London. The aggregate nominal capital, at £173,162,271, against £203,498,414, is £30,000,000 lower, but this is chiefly due to the fact that Imperial Chemical Industries was incorporated with the phenomenal capital of £65,000,000 at the end of 1926. During the year 21 companies were registered with capitals of £1,000,000 and upwards.

AT A MEETING IN CALCUTTA, under the presidentship of Mr. D. L. Jenks, Chemical Examiner to the Customs Department, it was resolved to start an Institute of Chemists in Calcutta. The objects of the Institute are to promote and advance the science, practice and business of analytical, manufacturing and engineering chemistry in all its branches, to diffuse among its members information on all matters affecting the chemical profession, and to encourage, assist, and extend knowledge and information on the subject by means of lectures, discussions, and correspondence. A further aim is to bring men engaged in the chemical profession into closer personal touch with one another.

SIR MAX MUSPRATT started for England from Colombo on January 3.

"B. AND L." POWDERED FUEL, LTD. (the Brand System), state that Mr. Harald Nielsen has been appointed fuel technologist.

DR. H. S. HATFIELD is writing a book for publication in the well-known "To-day and To-morrow" series, entitled: *Automaton, or The Future of the Mechanical Brain*.

THE HERCULES POWDER CO. has announced that naval stores production at its Brunswick, Georgia, works will be reduced by 20 per cent.

THE MINISTRY OF TRANSPORT INQUIRY into the proposed new by-laws to permit petrol-laden ships to proceed up the Thames as far as Purfleet was continued during the week.

THE BUSINESS of Peter Lind and Co., of 2, Central Buildings, Westminster, London, S.W.1, engineers and contractors, and specialists in reinforced concrete, has been converted into a limited company as from January 1.

THE SALES OF THE GERMAN POTASH SYNDICATE during December amounted to 1,004,756 double zentner of pure potash, compared with 958,861 in December, 1926. Sales last year reached a total of 12,394,060 double zentner, compared with 10,998,730 in 1926 and 12,255,117 in 1925.

MR. HENRY MOND, The Mond Nickel Co., and Babcock and Wilcox have subscribed to the Lord Mayor of London's fund in aid of the victims of the recent Thames floods, and Mr. Bryan Laing and the Torbay Paint Co., Ltd., are included among the subscribers to the Mayor of Westminster's fund.

AN AGREEMENT has been entered into between Automatic and Electric Furnaces, Ltd., London, and the Allgemeine Elektricitäts Gesellschaft, Berlin, whereby the latter company will manufacture and sell Wild-Barfield electric furnaces in Germany, Austria, Hungary, Jugoslavia, Bulgaria, Turkey, Greece, Roumania, China Finland, and Luxemburg.

MR. W. J. U. WOOLCOCK, general manager of the Association of British Chemical Manufacturers, has been appointed by the Board of Trade to be chairman of a committee to inquire into an application made by the Handkerchief and Embroidery Association under the Safeguarding of Industries procedure, for the imposition of a duty upon handkerchiefs and household goods of linen, cotton, jute, or hemp.

THE STANDING COMMITTEE set up under the Merchandise Marks Act to deal with applications concerning agricultural and horticultural produce recommend that an Order in Council should be made requiring all containers of imported honey, whether extracted or in the comb, to be marked with an indication of origin. They do not consider it necessary that a requirement of marking should extend to the time of importation, or to the time of exposure for sale wholesale.

AN INQUIRY was held by the Board of Trade committee, on Monday, into an application for an order under the Safeguarding of Industries Act for the marking of imported enamelled zinc sheets. Barclay and Fry, Ltd., and the Stelconite Metal Stamping Co., Ltd., were the applicants, and their application was opposed by the Emdeca Metal Decoration Co., Ltd. The inquiry was concluded, and the chairman intimated that the committee would report to the Board of Trade.

Obituary

MR. GEORGE ALEXANDER MARSDEN, of Swansea, retired analytical chemist, recently. He had been employed at Vivian's Works for 40 years.

PROFESSOR RICHARD PRIBRAM, of the University of Prague, at the beginning of January, in Berlin. His work was concerned with the relation between chemical constitution and physiological properties, with the optical rotatory power of organic substances, and other subjects.

MR. ALEXANDER WALKER FYFE, aged 36, whose death occurred recently at a Leeds nursing home. He was formerly employed as assistant works manager of the Huddersfield works of the British Dyestuffs Corporation, Ltd. He was M.A. and B.Sc. of St. Andrews University, and after graduation held a Carnegie Scholarship in chemistry, 1913-14. In 1915 he was awarded the Carnegie Fellowship, and carried out much original work in chemistry under Professor Irvine. The results of this work are published in a series of papers in the *Journal* of the Chemical Society. At the outbreak of war Mr. Fyfe endeavoured to join the Army, but was rejected, and in 1914-16 was employed on war work under the Ministry of Munitions in connection with the production of synthetic drugs and mustard gas. In 1916 he joined British Dyes, Ltd., and worked with Professor Robinson at Liverpool until the end of 1917. In 1918 he was transferred to Huddersfield. He carried out research work in the technical research department, was transferred to the works for a year, and returned to the research department again under Professor Robinson. From 1921 to 1924 he was employed in the research department at Blackley, chiefly on anthraquinone colours. At the end of 1924 he was appointed assistant works manager of the Huddersfield works of the British Dyestuffs Corporation, Ltd.

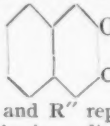
Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

281,795. New Derivatives of 2 : 3-Hydroxynaphthoic Arylides, Manufacture of. British Dyestuffs Corporation, Ltd., J. B. Payman and H. Wignall, Hexagon House, Blackley, Manchester. Application date, September 20, 1926.

These compounds are sulphonamido-arylamides of 2 : 3-hydroxy-naphthoic acid having the general structure :—



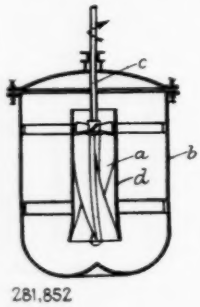
where R, R′, and R″ represent hydrogen or a hydrocarbon radical, and Ar is a divalent aromatic residue. They are obtained by condensing 2 : 3-hydroxy-naphthoic acid with an aromatic sulphonamide containing a primary or secondary amino group as substituent in addition to the sulphonamide group, and the hydrogen of the latter being substituted or not by a hydrocarbon radical. The components are treated with phosphorus trichloride in the presence of a diluent. Examples are given of the production of the meta sulphonamide derivative of 2 : 3-hydroxynaphthoic anilide, and similar derivatives.

281,827. Concentrating Aqueous Solutions of Acetic or Formic Acid, Method of. W. N. Haworth, The University, Edgbaston, Birmingham, and J. Nelson, Ltd., Valley Mills, Nelson, Lancs. Application date, October 19, 1926.

A solution of acetic acid containing more than 50 per cent. of water is mixed with anhydrous sodium acetate and distilled at reduced pressure to remove most of the water. The residue is then distilled under a more reduced pressure or preferably at a higher temperature to separate the acetate acid. The distillation may be effected at a vacuum of 15-25 mm. About 80 per cent. of the acetic acid can be recovered at 98-6 per cent. strength, and the aqueous distillate also contains acetic acid which may be recovered in a similar manner. Formic acid may be concentrated in a similar manner, using sodium formate. Detailed examples are given of the concentration of acetic and formic acids of 30 per cent. strength.

281,852. Stirring and Mixing, Apparatus for. J. Y. Johnson, London. (From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany.) Application date, November 15, 1926.

Stirrers in which helical paddles are mounted on a vertical shaft usually produce a vertical circulation of the liquid only at the beginning of the stirring operation, the subsequent movement of the liquid being a circular one. The provision of vertical baffles to oppose the rotational movement results in a loss of energy. In this invention a grinding device *a* with helical guide plates is arranged vertically below the stirrer *c* in a cylinder *d*. The current of liquid passes upwards through the grinding device.



281,852

281,927. Esters of the Cellulose Series. O. Y. Imray, London. (From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany.) Application date, April 19, 1927.

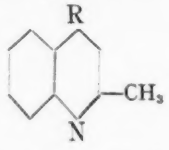
The acetylation of cellulose is performed in two stages. In the first, the weak catalyst usually employed is replaced by a small proportion of sulphuric acid so that a gentle and incomplete esterification occurs without any harmful degradation of the cellulose. The esterification is completed by adding a further proportion of sulphuric acid.

282,141. Gaseous Fuels, Production of. Synthetic Ammonia and Nitrates, Ltd., and K. Gordon, Billingham, Stockton-on-Tees, Durham. Application date, September 11, 1926.

The object is to obtain high grade water gas from solid fuel and steam. Finely divided fuel is passed with steam through an externally heated vessel constructed of an alloy steel containing a large proportion of chromium or similar addition, such as "Staybrite," "Era/A.T.V.," and "V2A." The fuel may be passed through tubes of such metals, heated by low grade coal in a similar manner to that of a pulverised fuel boiler furnace. The furnace gases should pass over the tubes at high velocity to secure a high rate of heat transfer. In an example, finely divided coke and steam are blown through a "Staybrite" tube 30 ft. long and ½ in. diameter at about 30 ft. per second, the tube being heated to about 1,000° C. A high grade water gas containing hydrogen 51 per cent., carbon monoxide 48 per cent., and carbon dioxide 1 per cent. is obtained. If air is admitted in addition, a gas is obtained which, after removal of carbon dioxide with steam furnishes the nitrogen-hydrogen mixture for the synthesis of ammonia. The process is continuous as distinct from the usual intermittent cycle.

282,143. Quinoline Derivatives, Process for Preparing. O. Y. Imray, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 11, 1926.

It has been found that 4-amino-quinolines containing in 2-position an unsaturated substituent, and their derivatives have a strong bactericidal action and are valuable for therapeutic purposes. These compounds are obtained by substituting in any order of succession in a derivative of the 2-methyl-quinoline having the formula



whese R is a halogen atom or an alkoxy-, hydrazino-, carbamino-, or carbazido- residue, or in a nuclear substitution product, an amino residue for residue R, and converting the 2-methyl group into a styryl residue. The procedure may be (1) a 4-halogen or 4-alkoxy derivative of the quinoline containing a styryl group in 2-position is heated with ammonia or primary or secondary amine; (2) a 4-hydrazino derivative of the quinoline is reduced; (3) an acid amide of 4-carboxylic acid of the quinoline is treated with a hypo-halogenite; (4) an acid of a 4-carboxylic acid of the quinoline is decomposed in the presence of water or alcohol and the urea derivative or the urethane produced is hydrolysed; (5) a 4-halogen- or 4-alkoxy-, or 4-hydrazino-, or 4-carbamino-, or 4-carbazido-2-methyl-quinoline is converted as above into a 4-amino-2-methylquinoline, which is then condensed with an aromatic aldehyde. A number of examples are given.

282,151. Azo-Dyestuffs, Manufacture of. W. Carpmael-London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 14, 1926.

These new azo dyestuffs are obtained from the reaction of equimolecular proportions of an azo dyestuff, obtained by coupling a diazo compound with a dioxy-naphthalene sulphonic acid, and an aromatic sulpho-halogenide in the presence of an agent which combines with the liberated acid. The dyestuffs are derivatives of the monoaryl-sulphonic acid esters of dioxy-naphthalenes. In an example the monoazo dyestuff from ortho-anisidine and the disodium salt of 1 : 8-dioxy-naphthalene-3 : 6-disulphonic acid is treated with para-toluene-sulpho-chloride and sodium carbonate.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—259,245 (A. Albert), relating to crystallised arsenobenzenes, see Vol. XV, p. 572 ; 259,950 (I.G. Farbenindustrie Akt.-Ges., relating to condensation products of urea, etc., and formaldehyde, see Vol. XV, p. 620 ; 259,960 (Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler), relating to new pyridine derivatives, see Vol. XV, p. 620 ; 259,973 (Deutsche Gold-und Silber-Scheideanstalt vorm. Roessler), relating to isonaphthyridine and its derivatives, see Vol. XV, p. 620 ; 262,086 (I.G. Farbenindustrie Akt.-Ges), relating to recovery of dehydrogenation products, see Vol. XVI, p. 143 ; 268,299 (Naugatuck Chemical Co.), relating to treatment of latex, see Vol. XVI, p. 516 ; 273,291 (Rhenania Kunheim Verein Chemischer Fabriken Akt.-Ges.), relating to manufacture of fertilisers, see Vol. XVII, p. 221.

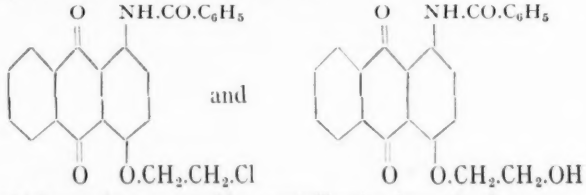
International Specifications not yet Accepted

280,246. SYNTHETIC RESINS. Canadian Electro Products Co., Ltd., 83, Craig Street, West, Montreal, Canada. (Assignees of H. W. Matheson, Montreal, and F. W. Skirrow, Shawinigan Falls, Quebec, Canada.) International Convention date, November 8, 1926.

A vinyl ester is treated with a saturated aldehyde which may be aliphatic or aromatic, at the ordinary or at a raised temperature, and in presence or absence of a mineral acid or other catalyst. Thus, vinyl acetate and acetaldehyde may be heated under pressure for six hours, and the unchanged materials are then steam-distilled off. Ordinary pressure under reflux, or ordinary temperature and pressure may be employed. Gummy or resinous products are obtained.

280,492. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, November 15, 1926.

To obtain orange vat dyestuffs of the anthraquinone series, radicles of polyvalent alcohols are introduced into the hydroxy group of 1-acylamino-4-oxyanthraquinone by treating it with esters such as the halogen hydride or arylsulphonic acid esters of polyvalent alcohols in the presence of substances which combine with acids. The acid radicles of the esters may be replaced by the 1-acylamino-4-oxyanthraquinone radicles. Thus, in an example, 1-benzoylamino-4-oxyanthraquinone may be boiled with *p*-toluenesulphonic acid chlorethyl ester in the presence of calcined soda and trichlor-benzene, to obtain a dyestuff consisting of a mixture of



which may be separated by crystallisation from nitrobenzene.

280,501. ACETIC ACID. H. Suida, 33, Jubiläumstrasse, Mödling, near Vienna. International Convention date, November 9, 1926. Addition to 230,447.

Specification 230,447 (See THE CHEMICAL AGE, Vol. xii, p. 507) describes the production of concentrated acetic acid from dilute acid. In this invention, the solvents employed are acylated or acetylated products from compounds containing hydroxyl groups such as glycol, glycerine, butyl alcohol, heavy wood tar oils, or brown coal creosotes or other alcohols and phenols.

280,520-1. SYNTHETIC RESINS. Bakelite Corporation, 247, Park Avenue, New York. (Assignees of H. L. Bender, 7, Carteret Street, Bloomfield, N.J., U.S.A.) International Convention dates, November 10 and 11, 1926.

280,520. Resins are obtained by the reaction of phenol with more than one molecular proportion of formaldehyde, followed by treatment with urea or other non-phenolic substance which reacts with excess of formaldehyde.

280,521. Phenol is condensed with anhydroformaldehyde aniline, or the corresponding derivative of another cyclic amine, or with formaldehyde and aniline. The products may be convertible by heat into infusible and insoluble substances, with or without previous treatment with a methylene-containing hardening agent. Examples are given.

280,511. PYRIDINE BASES. H. T. Bohme Akt.-Ges., 29 Moritzstrasse, Chemnitz, Saxony, Germany. International Convention date, November 10, 1926.

These bases are obtained by passing a mixture of aldehydes and ammonia at 200–400° C., and 50 atmospheres pressure over catalysts such as oxides or carbides of aluminium, iron, chromium, tungsten, uranium, or rare earth metals. Thus, a mixture of acetaldehyde and ammonia, or acetylene, water vapour, and ammonia may be passed over tungsten carbide to obtain picolines.

280,522. OXGENATED ORGANIC COMPOUNDS AND HYDROCARBONS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, November 15, 1926.

A mixture of hydrogen and oxides of carbon is passed over an iron catalyst containing alkalies and alkaline earths, at a temperature below 300° C. The products include solid oxygen-containing resins, paraffin wax, liquid containing paraffins, alcohols, and organic acids. In an example, a mixture of hydrogen and carbon monoxide is passed at 200° C over a catalyst made by precipitating ferric nitrate with ammonia, washing and drying the precipitate, impregnating it with potassium hydroxide ; and reducing with hydrogen. Copper may also be present to activate the catalyst.

280,529. TETRAZOLES. A. Boehringer, Neider-Ingelheim, Germany. International Convention date, November 10, 1926.

These compounds are obtained by the action of azides or free hydrazoic acid or esters of oximes, especially the sulphonic esters, or the Beckmann transformation products of the esters, or the components which produce the esters. Examples are given of the production of 1 : 5-dimethyl-1 : 2 : 3 : 4-tetrazole, 1-benzol-5-methyltetrazole, 1 : 5-diphenyltetrazole, 1 : 5-pentamethylene-tetrazole.

280,553. N.-MONOALKYL-AMINOPHENOLS. W. Traube, 11, Lutzowplatz, Berlin, and E. Hillriegel, 4, Nicklasstrasse, Regensburg, Germany. International Convention date, November 15, 1926.

These compounds are obtained from thiourea compounds of aminophenols (oxyphenyl-thioureas) by desulphurising by means of alkali and lead acetate, oxide, or hydroxide alkylating the resulting oxyphenyl-cyanamides with alkyl-halogenides, alkylsulphates, chlorsulphonic acid alkyl-esters, or arylsulphonic esters in alcoholic or aqueous alkaline solution, or sometimes without a solvent, and then splitting off the cyano group by heating with dilute hydrochloric or sulphuric acid. An example is given of the preparation of *p*-methylaminophenol.

LATEST NOTIFICATIONS.

283,187. Method of treating raw phosphate and the like. Liljenroth, F. G. January 8, 1927.

283,192. Separation of mixtures of liquids or liquids and solids. Soc. Anon. Des Charbons Acties E. Urbain. January 8, 1927.

283,194. Process for the production of mixed manures. Rhenania-Kunheim Verein Chemischer Fabriken Akt.-Ges. January 8, 1927.

283,159. Extraction of oils from materials containing the same. I. G. Farbenindustrie Akt.-Ges. January 5, 1927.

283,177. Process and apparatus for the production of hydrocarbons from coal and hydrogen. Uhlmann, A. January 6, 1927.

283,482. Manufacture of dyestuffs. Durand and Huguenin Akt.-Ges. January 10, 1927.

283,163. Manufacture of organic bases. I. G. Farbenindustrie Akt.-Ges. January 5, 1927.

283,181. Manufacture of soluble cellulose esters of higher fatty acids. I. G. Farbenindustrie Akt.-Ges. January 6, 1927.

283,222. Manufacture of photographic silver-salt emulsions. I. G. Farbenindustrie Akt.-Ges. January 7, 1927.

283,223. Manufacture of photographic silver-salt emulsions. I. G. Farbenindustrie Akt.-Ges. January 7, 1927.

283,485. Activation of carbon. I. G. Farbenindustrie Akt.-Ges. January 10, 1927.

283,467. Process for preparing sulphur dyes and their raw materials. Vidal, R. January 8, 1927.

283,471. Manufacture of acid-proof cements and acid-proof masonry. I. G. Farbenindustrie Akt.-Ges. January 8, 1927.

Specifications Accepted with Date of Application

250,248. Resinous condensation products of the urea formaldehyde type, Process for producing. Rohm and Haas Co. July 28, 1925.

259,200. Preventing the dissolution of iron and steel in sulphuric acid, Process for. Newport Co. September 30, 1925.

259,553. Refining of petroleum. Sharples Specialty Co. October 7, 1925.

260,000. Anthracene derivatives and benzanthrene, Manufacture of. I.G. Farbenindustrie Akt.-Ges. October 17, 1925.

260,619. Soft workable grey iron, Production of. L. Mellersh-Jackson. (*Maschinenfabrik Esslingen.*) October 29, 1926.

260,089. Purification of gases to be used in the production of ammonia, Process for. Norsk Hydro-Elektrisk Kvaelstof-aktieselskab. February 25, 1926.

260,732. Vulcanisation of rubber. Soc. Italiana Pirelli. February 24, 1926.

270,308. Mordant dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. April 27, 1926.

275,945. Anhydrous metal chlorides, Process for the production of. I.G. Farbenindustrie Akt.-Ges. August 13, 1926. Addition to 259,498.

281,218. Improved catalysts, Manufacture of. I.G. Farbenindustrie Akt.-Ges. November 27, 1926.

282,852. New vat dyestuffs, Process of manufacture of. British Dyestuffs Corporation, Ltd., and S. Thornley. September 2, 1926.

282,853. Anthraquinone derivatives, Manufacture of. O. Y. Imray. (*Soc. of Chemical Industry in Basle.*) September 21, 1926.

282,863. Isatin derivatives and indigoid dyestuffs therefrom, Manufacture of. O. Y. Imray. (*I.G. Farbenindustrie Akt.-Ges.*) September 25, 1926.

282,874. Carbonaceous materials, Treatment of. R. Lessing. September 27, 1926.

282,891. Aromatic oxamic acid halogenides, Process for the manufacture of. K. Carpmael and K. S. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) September 30, 1926.

282,892. Vulcanising rubber, Process for. K. Carpmael and K. S. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) September 30, 1926.

282,901. Nickel-cobalt and iron alloys. W. S. Smith, H. J. Garnett, and J. A. Holden. October 1, 1926.

282,907. Ortho-anisidine and similar aminophenol ethers, Manufacture of. J. Tcherniac. October 2, 1926.

282,913. New vat dyestuffs, Manufacture and use of. British Dyestuffs Corporation, Ltd., A. Shepherdson, and S. Thornley. October 8, 1926.

282,939. Purifying and cooling gases, Apparatus for. A. L. Mond. (*Metallbank und Metallurgische Ges.*) November 3, 1926.

282,927. Mixed phosphate fertilisers, Manufacture of—and the recovery of ammonia from industrial gases. H. Hollings and Gas Light and Coke Co. October 19, 1926.

282,947. Mercapto-thiazoles, Method of preparing. L. B. Sebrell and J. Teppema. November 9, 1926.

283,002. Condensation products of phenols with aldehydes, Process for the production of. G. Petroff. February 1, 1927.

283,032. Heating and cracking oils, Method and apparatus for. T. E. Robertson. (*Power Speciality Co.*) April 20, 1927.

283,049. Acid- and alkali-resistant coatings of rubber upon metal objects with the employment of an intermediate layer of rubber. F. Ahrens. April 16, 1927.

283,072. Alumina and phosphates from aluminium phosphates, Processes for the recovery of. L. Mellersh-Jackson. (*Rhenania Kunheim Verein Chemischer Fabriken Akt.-Ges.*) June 24, 1927.

283,089. Alkali hydrides, Process for the production of. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler, H. Freudenberg and H. Kloepfer. September 28, 1927. Addition to 276,313.

Applications for Patents

Asser, E. Production of paste containing red oxide of lead. 750. January 9.

Bader, W., and British Celanese, Ltd. Manufacture of organic compounds. 1,199. January 13. (July 20, 1926.)

Barnes, R. S., Harris, G. E. G., Scottish Dyes, Ltd., Smith, W., Thomas, T., and Wylam, B. Production of dyestuffs. 707. January 9.

Blair, G. Centrifugal separators. 991. January 11.

Böhme Akt.-Ges., H. T. Process for sulphonation of oils. 977. January 11. (Germany, January 27, 1927.)

Buchner, M. Process of producing alumina. 1,217. January 13.

Carpmael A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of materials from chlorinated organic bodies. 309. January 4.

Carpmael, K., and Carpmael, K. S. [legal representatives of Carpmael, W.], and Schering-Kahlbaum Akt.-Ges. Manufacture of guanidine derivatives. 400. January 5. (October 16, 1926.)

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Purification of caustic alkali solutions. 1,003. January 11.

Chemische Fabrik vorm. Sandoz. Acridine derivatives. 526. January 6. (Switzerland, January 6, 1927.)

Chemical Engineering and Wilton's Patent Furnace Co., Ltd., and Wilton, T. O. Distillation of tar. 849. January 10.

Dreaper, W. P. Treatment of artificial silk, etc. 650. January 9.

Dreyfus, H. Manufacture of aliphatic compounds. 859. January 10.

Dreyfus, H. Treatment of cellulose derivatives. 1,318. January 14.

Dreyfus, H. Cellulosic materials, etc. 1,319. January 14.

Durand and Huguenin Akt.-Ges. Manufacture of dyestuffs. 387. January 5. (Germany, January 10, 1927.)

Fleming, J. M. Apparatus for treating fats. 429. January 6.

Gordon, K. Hydrogenation of carbonaceous materials. 1,297. January 14.

Grace, C. J. Means of producing an emulsion of sulphur in water. 1,338. January 14.

Hercules Powder Co. Process of refining rosin. 879. January 10. (United States, October 6, 1927.)

Hirchberg, L. M. Production of hydrocarbons from bituminous, etc., materials. 459. January 6.

Hooley, L. J. Manufacture of derivatives of benzene, etc. 214. January 3.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of acetaldehyde. 56. January 2.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of artificial rubber. 57. January 2.

I.G. Farbenindustrie Akt.-Ges. Manufacture of monohalogenated naphthostyril compounds. 169. January 3.

I.G. Farbenindustrie Akt.-Ges. Manufacture of derivatives of urethanes. 170. January 3.

I.G. Farbenindustrie Akt.-Ges. Manufacture of materials from chlorinated organic bodies. 309. January 4.

I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Manufacture of azo dyestuffs, etc. 296. January 4.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of condensation products of urea, etc. 368. January 5.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of glutinous products. 369. January 5.

I.G. Farbenindustrie Akt.-Ges. Manufacture of indigoid vat dyestuffs. 179. January 3. (Germany, January 3, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of methylene chloride. 180. January 3. (Germany, January 3, 1927.)

I.G. Farbenindustrie Akt.-Ges. Extraction of oils. 281. January 4. (Germany, January 5, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of derivatives of 2-oxy-naphthalene-3-carboxylic acid amide. 297. January 4. (Germany, April 22, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of organic bases. 388. January 5. (Germany, January 5, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of 2 amino-3-carboxylic acid, etc. 488. January 6.

I.G. Farbenindustrie Akt.-Ges. Manufacture of soluble cellulose esters of higher fatty acids. 489. January 6. (Germany, January 6, 1927.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of photographic emulsions. 606, 607. January 7. (Germany, January 7, 1927.)

Imperial Chemical Industries, Ltd., and Rowell, S. W. Oxidation of volatile compounds. 22. January 2.

Imperial Chemical Industries, Ltd., and Shepherdson, A. Colouring rubber, etc. 75. January 2.

Imperial Chemical Industries, Ltd. Production of granular fertilisers. 631. January 9.

Imperial Chemical Industries, Ltd. Effecting chemical reactions in gases. 813. January 10.

Imperial Chemical Industries, Ltd. Manufacture of indiarubber-compounding ingredients. 990. January 11.

Imperial Chemical Industries, Ltd. Manufacture of fuse compositions. 1,233. January 13.

Imperial Chemical Industries, Ltd. Hydrogenation of carbonaceous materials. 1,297. January 14.

Kollath, W., Magistris, H., and Pharmagans Pharmaceutisches Institut L. W. Gans Akt.-Ges. Manufacture of phosphatides, etc. 898. January 10.

Laing, B., and Nielsen, H. Distillation of carbonaceous substances. 959. January 11. (May 18, 1927.)

Newall, H. Apparatus for separating fluids from solids. 370. January 5.

Scholefield, F. Oxidation processes. 544. January 7.

Scottish Dyes, Ltd., and Thomas, J. Manufacture of derivatives of benzene, etc. 214. January 3.

Uhlmann, A. Production of hydrocarbons from coal, etc. 360. January 5. (Germany, January 6, 1927.)

Wallwork, J. A. Dyeing silk. 34,944. December 23. (July 8, 1926.)

Wallwork, J. A. Dyeing animal fibres. 35,047. December 24. (July 8, 1926.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity strength, and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 2d. to 2s. 7d. per gall.; pyridinised industrial, 2s. 4d. to 2s. 9d. per gall.; mineralised, 3s. 3d. to 3s. 7d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity as from January 1, 1928.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3⅞d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7¼d. to 7¾d. per lb. Crude 60's, 2s. 3½d. to 2s. 5d. per gall. prompt; lower for forward delivery.

ACID CRESYLIC 99/100.—2s. 11d. to 3s. per gall. 97/99.— 2s. 7d. to 2s. 10d. per gall. Pale, 95%, 2s. 3d. to 2s. 6d. per gall. Dark, 95%, 2s. 1d. to 2s. 3d.

ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7¾d. to 8d. per gall.

BENZOLE.—Crude 65's, 9¼d. to 9¾d. per gall., ex works in tank wagons. Standard Motor, 1s. 1½d. to 1s. 2½d. per gall., ex works in tank wagons. Pure, 1s. 5d. to 1s. 6d. per gall., ex works in tank wagons.

TOLUOLE.—90%, 1s. 4d. to 1s. 8d. per gall. Firm. Pure, 1s. 6d. to 1s. 11d. per gall.

XYLOL.—1s. 3d. to 1s. 8d. per gall. Pure, 1s. 9d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 8d. to 9d. per gall. Heavy, 8¾d. to 9d. per gall. Standard specification, 7¼d. to 7¾d. ex works. Salty, 7d. per gall., less 1½%.

NAPHTHA.—Crude, 9d. to 10d. per gall. Solvent 90/160, 9½d. to 10d. per gall. Solvent 95/160, 1s. 3d. to 1s. 4d. per gall. Solvent 90/190, 9½d. to 1s. 2d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed or hot pressed, £8 per ton.

NAPHTHALENE.—Crystals, £13 to £13 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 85s. to 90s. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 5s. 6d. to 6s. 6d. per gall. 90/180, 3s. 6d. to 5s. per gall. Heavy, 3s. to 3s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 5d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 5d. per lb.

DICHLORANILINE.—1s. 10d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8½d. per lb.

p-TOLUIDINE.—2s. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3d. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 5d. to 2s. 7d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 6¾d. to 1s. 7¼d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P. PULV.—1s. 2½d. to 1s. 4d. per lb.; Technical.—11½d. to 11¾d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 3¼d. per lb., less 5%.

ACETANILIDE.—1s. 6d. to 1s. 9d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—8s. to 8s. 3d. per lb.

AMMONIUM BENZOATE.—3s. to 3s. 3d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.

ATROPINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—10s. 4d. to 10s. 7d. per lb.

BISMUTH CITRATE.—9s. 10d. to 10s. 1d. per lb.

BISMUTH SALICYLATE.—8s. 10d. to 10s. 1d. per lb.

BISMUTH SUBNITRATE.—8s. 4d. to 8s. 7d. per lb.

BISMUTH NITRATE.—6s. 1d. to 6s. 4d. per lb.

BISMUTH OXIDE.—13s. 10d. to 14s. 1d. per lb.

BISMUTH SUBCHLORIDE.—13s. 10d. to 14s. 1d. per lb.

BISMUTH SUBGALLATE.—8s. 1d. to 8s. 4d. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi et Ammon, Cit. B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts., 11½d. per lb.

BORAX B.P.—Crystal, 25s. per cwt.; powder, 26s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Ammonium, 1s. 11d. to 2s. 1d. per lb.; potassium, 1s. 7¾d. to 1s. 9¾d. per lb.; sodium, 1s. 10d. to 2s. per lb.; granulated, ¼d. per lb. less; all spot. Large quantities at lower rates.

CALCIUM LACTATE.—1s. 2d. to 1s. 4d. per lb.

CAMPHOR.—Refined flowers, 2s. 11d. to 3s. 1d. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 3d. to 2s. 7¼d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. '730—1s. 1d. to 1s. 2d. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 10d. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE.—B.P., 2s. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb.; U.S.P., 2s. 2d. to 2s. 5d. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.

MENTHOL.—A.B.R. recrystallised B.P., 16s. 6d. per lb. net for January delivery; Synthetic, 9s. to 10s. per lb.; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10s. to 5s. 11d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 5d. to 1s. 9d. per lb.

METHYL SULPHONAL.—9s. to 9s. 3d. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 1d. to 1s. 4d. per lb.

PHENACETIN.—2s. 6d. to 2s. 9d. per lb.

PHENAZONE.—4s. to 4s. 3d. per lb.

PHENOLPHTHALEIN.—6s. 6d. to 6s. 9d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—94s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P.C., 1911, 1s. 8d. to 1s. 11d. per lb.; U.S.P., 1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 5d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—55s. per lb.; in quantity lower.

SALOL.—2s. 4d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—2s. to 2s. 1d. per lb. for 1-cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 7d. to 1s. 9d. per lb. Crystal, 1s. 8d. to 1s. 10d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—6s. 9d. to 7s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 2d. per lb.

THYMOL.—Puriss., 10s. to 10s. 3d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—11s. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—4s. 9d. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.

COUMARIN.—10s. per lb.

CITRONELLOL.—13s. 6d. per lb.

CITRAL.—8s. 3d. per lb.

ETHYL CINNAMATE.—6s. per lb.

ETHYL PETHALATE.—3s. per lb.

EUGENOL.—8s. 3d. per lb.

GERANIOL (PALMAROSA).—17s. 9d. per lb.

GERANIOL.—6s. to 10s. per lb.

HELIOTROPINE.—4s. 6d. per lb.

ISO EUGENOL.—13s. per lb.

LINALOOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 18s. 6d. per lb. Ex Shui Oil, 14s. 6d. per lb.

METHYL ANTHRANILATE.—8s. 6d. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—35s. per lb.

MUSK XYLOL.—8s. per lb.

NEROLIN.—4s. 6d. per lb.

PHENYL ETHYL ACETATE.—11s. 6d. per lb.

PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.

RHODINOL.—32s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 8d. per lb.

VANILLIN.—15s. 3d. to 16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.

ANISE OIL.—2s. 9d. per lb.

BERGAMOT OIL.—25s. per lb.

BOURBON GERANIUM OIL.—14s. per lb.

CAMPHOR OIL.—9d. per lb.

CANANGA OIL, JAVA.—14s. 6d. per lb.

CINNAMON OIL LEAF.—6s. 9d. per lb.

CASSIA OIL, 80/85%.—6s. 9d. per lb.

CITRONELLA OIL.—Java, 2s. per lb., c.i.f. U.K. port. Ceylon, pure, 1s. 9d. per lb.

CLOVE OIL.—5s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN.—2s. 1d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 17s. per lb.

LEMON OIL.—9s. per lb.

LEMONGRASS OIL.—4s. 3d. per lb.

ORANGE OIL, SWEET.—12s. 6d. per lb.

OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 65s. per oz.

PALMA ROSA OIL.—11s. per lb. nominal.

PEPPERMINT OIL.—Wayne County, 16s. per lb.; Japanese, 7s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, January 19, 1928.

THE improvement in trade is maintained and markets on the whole continue firm with slight advances reported in a few products. Export trade is fairly satisfactory.

General Chemicals

ACETONE continues firm and in brisk demand at £64 to £66 per ton, according to quantity.

ACID ACETIC is in fair request at the firm rate of £37 to £38 per ton for standard 80% grades.

ACID CITRIC is reported higher at 1s. 7d. per lb. and market is firm with more inquiry.

ACID FORMIC.—Steady at unchanged prices of £45 to £47, according to quantity.

ACID LACTIC is in good request at £43 per ton for 50% weight, pale quality.

ACID OXALIC is firm and in satisfactory demand at £30 to £31 per ton.

ACID TARTARIC is reported higher at 1s. 3d. to 1s. 3½d.

ALUMINA SULPHATE is firm and in good request at £5 15s. to £5 17s.6d. per ton with imported material rather scarce on the spot.

AMMONIUM CHLORIDE.—The price for fine white quality rather slack with disappointing demand. Price about £18 10s. per ton on the spot.

ARSENIC is in poor request and price unchanged at £18 to £20 per ton, according to quantity.

BARIUM CHLORIDE is steady at £8 to £9 per ton with demand fair.

COPPER SULPHATE is firm and in short supply for near delivery. Price nominal at about £25 with a premium for near delivery. Makers fully booked forward.

CREAM OF TARTAR is reported higher at 97s. 6d. with market very firm and demand increasing.

EPSOM SALTS.—Higher prices are quoted with imported material in rather short supply on the spot. Market very firm.

FORMALDEHYDE is in better request, with price steadier at £41 to £43 per ton.

LEAD ACETATE.—Active with price firm at £42 for white and brown at £1 per ton less.

LIME ACETATE is firm with grey quality in short supply and price dearer.

LITHOPONE is active and price steady at about £20 per ton for good 30% red seal quality.

METHYL ACETONE is in good demand at unchanged price of £54 to £55 per ton for best quality.

POTASSIUM CHLORATE is higher at £28 per ton and in rather short supply for prompt shipment. Demand active.

POTASSIUM CARBONATE AND CAUSTIC are in good request with higher prices for the latter.

POTASSIUM PERMANGANATE.—The demand is improving and price now settled at about 5d. per lb. for best grades.

POTASSIUM PRUSSIATE is firm at £59 to £63 per ton according to quantity, with demand good.

SODIUM ACETATE.—Still in short supply especially for delivery over next few months. Price extremely firm at £20 per ton with a good demand.

SODIUM BICHROMATE is unchanged at British makers' prices with a good inquiry.

SODIUM CHLORATE is in short supply for near delivery with price very firm at £26 to £28 per ton and inclined to go higher.

SODIUM NITRITE holds firm at £19 10s. to £20 per ton with active inquiry.

SODIUM PRUSSIATE is unchanged at the firm price of 4½d. to 5d. per lb. according to quantity, with good demand.

ZINC SULPHATE is unchanged at about £13.

Coal Tar Products

There is little change to report in the values of coal tar products from last week, and the market remains quiet.

90's BENZOL is unchanged, at about 1s. 3d. to 1s. 4d. per gallon, while the motor quality is quoted at 1s. 1d. to 1s. 2d. per gallon.

PURE BENZOL is worth about 1s. 5½d. to 1s. 6½d. per gallon, on rails.

CREOSOTE OIL remains firm at about 7½d. per gallon, on rails, in the North, while the price in London is about 8½d. per gallon.

CRESYLIC ACID is quoted at about 2s. 5d. per gallon, on rails, for the pale quality, 97/99%, while the dark quality, 95/97%, is worth about 2s. per gallon.

SOLVENT NAPHTHA can be bought at about 8½d. per gallon, on rails.

HEAVY NAPHTHA is unchanged, at about 10d. per gallon.

NAPTHALENES are very firm, at about £6 15s. to £7 per ton for the 74/76 quality, and at about £8 to £8 15s. per ton for the 76/78 quality.

PITCH is quiet, to-day's value is 80s. to 85s. f.o.b.

Latest Oil Prices

LONDON, January 18.—LINSEED OIL firm at 5s. to 7s. 6d. per ton advance. Spot, ex mill, £29 10s.; January, £28 5s.; January-April, £28 17s. 6d.; May-August, £30 2s. 6d.; September-December, £30 10s. RAPE OIL quiet. Crude extracted, £43 10s.; technical refined, £45 10s. COTTON OIL slow. Refined common edible, £42; Egyptian crude, £37 10s.; deodorised, £44 per ton. TURPENTINE inactive and 3d. per cwt. lower. American spot, 42s. 6d.; February-April, 42s. 9d.

HULL, January 18.—LINSEED OIL.—Spot and January, £29 2s.6d.; February-April, £29 5s.; May-August, £29 17s. 6d.; September-December, £30 7s. 6d. per ton, naked. COTTON OIL.—Bombay crude, £32; Egyptian crude (new), £35 10s.; edible refined, £39 5s.; technical, £35 10s.; deodorised, £41 5s. per ton, naked. PALM KERNEL OIL.—Crushed, 5½ per cent., £39 per ton, naked. GROUNDNUT OIL.—Crushed-extracted, £45 10s.; deodorised, £49 10s. per ton. SOYA OIL.—Extracted and crushed, £33 5s.; deodorised, £36 15s. per ton. RAPE OIL.—Crude, extracted, £42 10s.; refined, £44 10s. per ton, net cash terms, ex-mill. CASTOR, COD, and TURPENTINE unchanged.

Nitrogen Products

Export.—There has been a little more demand during the past week from the Continent, and some fair quantities have been sold for prompt delivery in Spain. Prices still remain unchanged at about £9 12s. to £9 16s. per ton f.o.b. U.K. port in single bags.

Home.—An increasing number of orders have been booked during the past week and one or two urgent orders for prompt delivery have been received.

Nitrate of Soda.—The principal feature is a report from Germany that a group of merchants have been offering nitrate of soda at £9 15s. per ton of 1,000 kilos at Hamburg. We are not in a position to state definitely whether this report is true, but it represents a considerable reduction in the prices which had previously been quoted. The market generally for nitrate of soda has been dullish.

South Wales By-Products

THERE is no material change to report in South Wales by-product activities. There has been a slight general increase in demand but business is still on the quiet side. Pitch remains unchanged at about 85s. per ton delivered, and is not being too freely offered. Solvent and heavy naphthas have a sharper call, solvent selling at 8½d. per gallon on rail, and heavy naphtha at 10d. per gallon. Tars have a strong market. Crude tar continues to sell at from 60s. to 65s. per ton. Coke oven tar is unchanged at 8½d. to 9d. per gallon, and gaswork's tar at 7d. to 7¾d. per gallon, f.o.r., maker's works, and from 10d. to 1s. per gallon delivered in barrels. Patent fuel and coke exports continue to expand, while oil imports and exports are highly satisfactory. Patent fuel export prices remain unchanged at from 22s. 6d. to 24s. per ton; coke (best foundry), 35s. to 37s. 6d. per ton, and other sorts from 27s. 6d. to 35s. per ton.

New B.D.H. Catalogue

THE new edition of the catalogue of the fine chemical products of British Drug Houses, Ltd., for January, 1928, appears in a much expanded form, the lists covering 130 pages, as compared with 108 in the last edition (July, 1927). The catalogue is divided into five sections, the first (91 pages) dealing with organic and inorganic chemicals. Then follow sections on analytical reagents, "A.R."; indicators for the determination of hydrogen ion concentration and kindred products; volumetric solutions and standardising chemicals, miscellaneous reagents for special tests and special analyses, etc.; reagents and requisites for microscope work; aniline dyes for technical purposes, filter paper, etc. The range of products covered in the catalogue is astonishing.

IT IS PLANNED TO ERECT a sulphite cellulose factory on the shores of Lake Ladoga, near Kexholm. It is stated that German capital is interested as well as Finnish, and that the site of the factory has been chosen chiefly owing to the fact that Russian raw material is to be used.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, January 18, 1928.

BUSINESS in the heavy chemical market has been quite bright during the past week, a feature being the increased amount of export inquiry. There are no changes in prices of any importance to record.

Industrial Chemicals

ACETONE, B.G.S.—£63 to £66 per ton, ex store, according to quantity.

ACID ACETIC.—98/100%, glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80%, pure, £37 10s. per ton, ex wharf; 80%, technical, £37 10s. per ton, ex wharf.

ACID, BORIC.—Crystals, granulated or small flakes, £30 per ton; powdered, £32 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In moderate demand and quoted price unchanged at 7¼d. per lb., f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—On offer at 1s. 7d. per lb., less 5%, ex store, spot delivery.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality at 4s. 6d. per carboy. Dearsenicated quality, 6s. per carboy, ex works, full wagon loads.

ACID NITRIC, 80°.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the Continent at 3¼d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID SULPHURIC.—£3 7s. 6d. per ton, ex works, for 144° quality; £6 5s. per ton for 168° quality. Dearsenicated quality 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Still in little demand, but price unchanged at 1s. 2½d. per lb., less 5% ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM.—Lump potash quality quoted £8 5s. per ton, c.i.f. U.K. ports. Crystal meal, 10s. per ton less. Lump quality on spot offered at £9 per ton, ex store.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA, LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture unchanged at £23 to £24 per ton, ex station. Continental on offer at £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £17 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Quoted £19 15s. per ton, ex wharf, prompt despatch from mines. Spot material on offer at about £20 15s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton ex store. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%. Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers, £6 12s. 6d. per ton delivered, minimum 4-ton lots. Continental on offer at £6 10s. per ton, ex wharf.

BORAX.—English manufacturers' prices unchanged as follows: Granulated, £19 10s. per ton; crystals, £20 per ton; powdered, £21 per ton. Odd parcels of granulated on offer from America at about £16 per ton, ex wharf.

CALCIUM CHLORIDE.—British manufacturers' price £4 15s. to £5 5s. per ton, ex station, according to quantity and point of delivery. Continental material quoted £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or at £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental material quoted £23 per ton, c.i.f. U.K. ports. British on offer at £24 per ton, ex store.

FORMALDEHYDE, 40%.—On offer at £37 5s. per ton, c.i.f. U.K. ports. Spot material quoted £39 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—American material quoted £31 10s. per ton, ex store

LEAD, WHITE.—On offer at £31 15s. per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports; brown about £38 10s. per ton, c.i.f. U.K. ports. Spot material on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH CAUSTIC, 88/92%.—Solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15-ton lots. Under 15-ton lots, £29 10s. per ton. Liquid, £15 per ton, minimum 15-ton lots, Under 15-ton lots, £15 7s. 6d. per ton c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—4⅛d. per lb., delivered minimum, 4-ton lots. Under 4-ton lots ⅛d. per lb. extra.

POTASSIUM CARBONATE, 96/98%.—Rather scarce for immediate delivery. Quoted £25 10s. per ton, ex wharf. Spot material about £26 10s. per ton, ex store.

POTASSIUM CHLORATE, 99/100%.—Offered from the Continent at £25 15s. per ton, c.i.f. U.K. ports for powdered quality. Crystals 30s. per ton more.

POTASSIUM NITRATE.—Quoted £19 5s. per ton, ci.i.f. U.K. ports. Spot material on offer at £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6½d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at about 6¼d. per lb., ex store, spot delivery. Offered from the Continent at 6⅜d. per lb.

SODA CAUSTIC.—Powdered, 98/99%, £17 17s. 6d. per ton; solid, 76/77%, £14 10s. per ton, minimum 4-ton lots, carriage paid for contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—In good demand and in limited supply for prompt delivery. Imported material now quoted £19 15s. per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station, M.W. quality 30s. per ton less. No change in price for this year.

SODIUM BICHROMATE.—Quoted 3d. per lb., delivered buyers' works, minimum 4-ton lots. Under 4 and over 2-ton lots 3 1/16d. per lb.; under 2-ton lots, 3¼d. per lb.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality 27s. 6d. per ton extra.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—In moderate demand and price unchanged at about 4¼d. per lb., ex store. Offered for prompt shipment from the Continent at 4⅛d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, for unground quality, 52s. 6d. per ton, delivered. Ground quality, 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices now as follows: Solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £9 2s. 6d. per ton, delivered buyers' works on contract minimum 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; floristella, £9 10s. per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports. 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material quoted £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Textile Recorder Year Book

THE *Textile Recorder Year Book*, of which the 1928 edition is just out (John Heywood, Ltd., pp. xcvii, 1004, 7s. 6d., inland post, 8s. 3d., foreign 8s. 6d.) is surely one of the most complete and remarkable handbooks of its class published; in fact, "a textile library in brief." The immense textile industry is covered in practically all its phases, and the compiler and editor, Mr. Frank Nasmith, has done a work of real value. Essential additions, amendments and corrections have been made in the 1928 edition. Particular attention has been paid to the provision of statistics in relation to the supply of raw material. Figures of production of cotton, wool, flax, jute, silk and artificial silk have been compiled by experts in each section. The thousand pages of matter are sectionalised to make reference easy and provided with a very complete index.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, January 19, 1928.

A fair flow of business is being experienced on the Manchester chemical market, particularly in respect of contract deliveries of those heavy products which were substantially reduced by British makers from the beginning of January. On prompt and early delivery account a moderately satisfactory trade is being put through, and the indications seem to point to a quiet improvement compared with recent ruling conditions. So far as demand for export is concerned, this is still of a rather quiet character on this market.

Heavy Chemicals

A moderate call for bicarbonate of soda has been reported, and there has been no change in the price situation, offers being in the neighbourhood of £10 10s. per ton. In the case of caustic soda, business is on a fair scale both in respect of spot sales and on contract account, and values are steady at from £13 7s. 6d. up to £15 7s. 6d. per ton, according to quality. There has been little alteration in the general position of hyposulphite of soda; inquiry is rather on the slow side, but prices remain at about £16 5s. per ton for the photographic, and £9 10s. for the commercial grade. Sulphide of sodium meets with a moderate demand and, if anything, quotations are a shade dearer than those current a week ago, the commercial quality selling at round £8 10s. per ton and the 60-65 per cent. concentrated solid at £10 5s. Phosphate of soda is maintained at round £12 15s. per ton, and a quiet trade is passing. Inquiry for prussiate of soda is on a fair scale, with offers at up to 4⅜d. per lb. Chlorate of soda is in moderate request and values continue firm at round 3d. per lb. Bleaching powder is moving off in fairly satisfactory quantities at the reduced price to home users of £7 per ton. Saltcake meets with a quietly steady demand at £2 12s. 6d. per ton in contracts. A steady inquiry is reported in the case of alkali, offers of which by makers are on the basis of £6 2s. 6d. per ton. Bichromate of soda is steady and in fair request at 3½d. per lb. Nitrite of soda is a moderately active section and values are maintained at £19 to £19 5s. per ton.

Caustic potash is in quietly steady demand and prices are firm at £33 5s. per ton for prompt delivery of one to five ton lots. A fair trade is reported in the case of carbonate of potash, current offers of which are at round £25 15s. per ton. Bichromate of potash keeps steady and is selling in moderate quantities at from 4¼d. to 4½d. per lb. Yellow prussiate of potash is in quiet demand, but values are maintained at about 6½d. per lb. There is not much stirring yet in permanganate of potash, offers of which are at 5½d. per lb. for B.P. and 4½d. for commercial quality. Chlorate of potash keeps steady at 3d. to 3¼d. per lb., and a moderate inquiry is reported.

Little change has occurred in the position of arsenic; demand is on a quiet scale and quotations are at about last week's range of £17 15s. to £18 per ton at the mines for white powdered, Cornish makes. Sulphate of copper is firm at up to £25 per ton, f.o.b., and a steady business is being put through. Acetate of lime is well held, grey quality now being quoted at from £16 10s. to £17 per ton and brown at about £10 10s. Acetate of lead is in rather slow demand and the tendency is easy again, although at about £41 10s. per ton for white and £39 10s. for brown there has been little actual change on the week. Nitrate of lead is in quiet request at round £37 10s. per ton.

Acids and Tar Products

Buying interest in tartaric acid is inactive, but price is fairly steady at about 1s. 2¾d. per lb. Citric acid meets with a quiet demand and values are maintained at 1s. 7d. per lb. A fair business is being done in acetic acid, with glacial still quoted at £66 to £67 per ton and 80 per cent. commercial at about £37 per ton. Oxalic acid remains quiet, but offers are still at 3¼d. to 3½d. per lb.

Among the by-products solvent naphtha is in limited request, and offers are weak at 10¾d. to 11d. per gallon. There is still only a quiet demand for pitch, and current values are little better than £3 17s. 6d. per ton, f.o.b. Creosote oil keeps firm and meets with a steady inquiry at up to 8d. per gallon. Carbolic acid attracts little attention at the moment but prices are about unchanged at 2s. 4d. per gallon for crude material and 7¼d. to 7½d. per lb. for crystals.

Chalk Fuel Case

Trial at Old Bailey

The trial began, before the Common Serjeant (Sir Henry F. Dickens), at the Old Bailey on Monday, January 16, of Sir Charles Buckworth-Herne-Soame, Colonel Edmund Octavius Eaton, and Robert George Harley, who pleaded not guilty to an indictment charging them with conspiring between January 1, 1914, and April 12, 1927, together with other persons, to defraud such persons as might receive prospectuses and/or pamphlets issued by the Chalk Fuel, Power, Gas, and By-products Corporation, Ltd. They were also charged with obtaining money from such persons by falsely pretending that certain reports appearing in the prospectuses and pamphlets were true and genuine reports upon the fuel referred to. Mr. Percival Clarke, prosecuting, said that a prospectus had been issued accompanied by a statement falsely alleged to have been signed by Mr. J. H. Franklin, an engineer who had tested the fuel, and stating in regard to the test "It is a real success in locomotive furnacing."

Mr. Franklin gave evidence as to his tests of the fuel, which had not proved satisfactory. Sir Charles Buckworth-Herne-Soame, in the witness box, said that, of several materials used for the fuel, chalk was the most satisfactory. He was present at two of Mr. Franklin's tests, and as far as he could see it was perfectly satisfactory. The first hint he had that the reports published on the fuel were not all right was when he received a summons. Five pounds, as petty cash, was all the money he had received from the company.

Ramsay Memorial Fellowships

The appointments to Ramsay Fellowships in Chemical Science for this session, British, Dominion and foreign, are practically completed. At the present time ten Fellowships are being held in the universities and colleges of the United Kingdom. The list of awards for the present session is as follows. The university or college which has been selected by the Fellow for his research is given in each case:—British Fellowships—Mr. R. F. Hunter, M.Sc., Ph.D., Imperial College of Science and Technology, London; Mr. A. M. Taylor, B.A., University of Cambridge. Glasgow Fellowship—Mr. James D. Fulton, M.A., B.Sc., University of Manchester. Canadian Fellowship—Mr. W. H. Barnes, M.Sc., Ph.D., Royal Institution, London. Danish Fellowship—Miss Augusta M. Unmack, University of Oxford. Dutch Fellowship—Vacant during 1927-28. French Fellowship—M. Robert le Guyon, University College, London. Greek Fellowship—Temporarily vacant. Italian Fellowship—Dr. Gastone Guzzoni, Royal School of Mines, London. Japanese Fellowship—Dr. Yohei Yamaguchi, University College, London. Spanish Fellowship—Señor Fernando Calvet—University of Oxford. Swedish Fellowship—Mr. H. Liander, University College, London. Swiss Fellowship—Vacant during 1927-28.

The total value of the annual amount of the Fellowships that is awarded is approximately £4,000, of which about £3,000 is provided by grants from Dominion and foreign sources.

Colouring Cement and Stone

Cement, which has come to the fore of late years for housing construction, has the disadvantage of a rather dismal grey colour, and many processes have been devised to overcome this either by dyeing the cement, mixing colour with the raw material or painting the finished constructional work. An Edinburgh chemist has come forward with a new process, for which certain advantages over other methods are claimed. In a demonstration recently a surface of 2,000 square feet of grey harled cement was treated. The method consists in applying a spray of water to the cement or stone face, followed by a stream of dry cement-like coloured powder. The powder adheres to the film of water with which it combines and ultimately becomes hard, colouring, waterproofing and preserving the wall face. One of the interesting features is that it leaves the harled surface standing out as sharply as in the original cement wall. It is understood that many other forms of building material may be treated, such as metal, wood, and stone surfaces. The agents for this method are the Surface Finish Buildings Co., 17, Spring Gardens, Abbey Hill, Edinburgh.

Company News

SAVORY AND MOORE, LTD., of New Bond Street, London, on Monday completed negotiations for the acquisition of John Bell and Croyden, Ltd.

ELLIOTT'S METAL CO.—Interim dividends, payable on February 1, have been declared as follows: 2½ per cent. on the preference shares and 3 per cent. on the ordinary shares, both less tax.

NEW TRANSVAAL CHEMICAL CO.—The balance standing to the credit of the profit and loss account as at June 30, 1927, including £7,426 brought forward, is £65,530. After allowing for dividends on first preference shares and dividends on "A" preference shares, the directors recommend payment of the remuneration of the London board, £630, and a dividend of 12½ per cent. on the ordinary shares, leaving a balance to be carried forward of £9,650. The annual meeting will be held at 8, Crosby Square, London, on January 25, at 12 noon.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

SOAPS, OILS AND CHEMICALS FOR WOOLLEN MANUFACTURERS AND TANNERS.—A manufacturers' agent in Melbourne desires to obtain the representation of British manufacturers of the above products. (Reference No. 50.)

PRIMARY BATTERY MATERIAL FOR MELBOURNE—The Deputy Director, Posts and Telegraphs, Melbourne, is calling for tenders to be presented by January 31 for primary battery material, consisting largely of dry cells, with some porous pots, earthenware jars, zincs, ammonium chloride and copper sulphate, for Melbourne. (Reference B.X. 4134.)

DISINFECTING FLUID.—The Director-General, India Store Department, Branch No. 10, Belvedere Road, Lambeth, S.E.1, invites tenders for 7,000 gallons disinfecting fluid. Tenders due January 24, 1928. Sample required with tender. Forms obtainable from the above at a fee of 5s. per set, which will not be returned.

CHEMICALS FOR THE TEXTILE INDUSTRY, TANNING EXTRACTS, ETC.—A well-connected firm at Gabrovo desires to obtain the representation for Bulgaria of British firms. (Reference No. 58.)

DRUGS, COLOURS.—An agent in Budapest desires to secure the representation of British manufacturers of drugs and colours. (Reference No. 65.)

WOOD NAPHTHA.—The Egyptian Customs Administration is calling for tenders to be presented by February 29 for the supply of 150,000 kilos of wood naphtha. (Reference B.Xf 4154.)

Fish By-Products in British Columbia

THE production of fish oil and meal on the western coast of Vancouver Island, the centre of the industry, broke all records this season with a total output of approximately 3 million gallons of oil and 13,000 tons of fish meal, as compared with last year's figures amounting to 2 million gallons and 8,000 tons respectively. Nineteen plants were in operation and practically all of the product has already been shipped abroad, most of it to Europe and to Great Britain, although some was marketed in the United States. Fish oil and meal come mostly from the reduction of the pilchard. The fish came late from the fishing grounds, but they were in enormous quantities, resulting in tremendously heavy hauls, and then later a second heavy run developed.

A Fertiliser Booklet

"UP TO DATE FARMING WITH CYANAMIDE," issued by Fertiliser Sales, Ltd., is full of useful information on the use of this nitrogen and lime fertiliser, and contains many practical hints as to its application to different soils and crops. The first section contains an interesting survey of the modern method of manufacture. Cyanamide has, of course, the advantage that it is not a quick acting fertiliser and that its compounds are not likely to be washed out by heavy rains.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the registration of the following Trade Marks can be lodged up to February 11, 1928.

"VULCVAR."

485,904. Class 1. Paints, varnishes, enamels, dry colours, distempers, japans, lacquers, anti-corrosive and anti-corrosive oils. Pinchin, Johnson and Co., Ltd., General Buildings, Aldwych, London, W.C.2; varnish, colour and paint manufacturers.—November 16, 1927. (To be associated, Section 24.)

"VIGANTOL."

485,067. Class 2. Chemical substances used for agricultural, horticultural, veterinary and sanitary purposes. Bayer Products, Ltd., 31 to 34, Basinghall Street, London, E.C.2; merchants and manufacturers; and H. R. Napp, Ltd., 3 and 4, Clements Inn, Kingsway, London, W.C.2; manufacturing chemists.—October 20, 1927. (To be associated, Section 24.)

"ALUSIL."

485,462. Class 1. Chemical substances used in manufactures, photography or philosophical research and anti-corrosives. Reckitt and Sons, Ltd., Kingston Starch Works, Dansom, Lane, Hull, Yorkshire; manufacturers.—November 3, 1927.

Tariff Changes

FRANCE.—By a provision of the 1928 Budget Law the turnover tax, which had previously been fixed until December 31, 1927 only, has been continued indefinitely on nitrates of soda and calcium, sulphates of ammonia, potash salts, K_2O, and superphosphates.

Miscellaneous Chemical Industries in Canada in 1926

IN a miscellaneous collection of plants making chemica products in Canada which cannot be classified in any of the main divisions of the chemical industry, production in 1926 amounted in value to $11,851,164, as compared with an output valued at $10,699,162 in 1925. This group includes plants engaged in the manufacture of adhesives, baking powder, boiler compounds, celluloid, and artificial leather products, flavouring extracts, insecticides, polishes and dressings, sweeping compounds and other miscellaneous chemicals. In 1926 there were 134 plants in operation. The output values were as follows: adhesives, $1,710,095; baking powder, $2,820,797; boiler compounds, $266,655; celluloid products, $2,314,253; flavouring extracts, $1,722,496; insecticides, $711,435; sweeping compounds, $68,311; polishes and dressings, $1,406,581; and other chemical products, $830,541. These figures do not indicate commodity production for the substances named, but represent the output values of all firms making these articles as their major products.

Beet Sugar in Norway

OWING to the hard climate there is not, and never has been, any beet cultivation nor any sugar factories in Norway. The sugar consumption, which comes to about 70,000 tons a year, is all imported, chiefly from Germany, England, Holland, America, and Poland. However, in Sweden and Denmark national sugar industries are flourishing, and even in Finland beet growing has been started and has already proved an economic possibility. The Norwegian farmers' association has taken up the sugar question, and there have been carried out for several years cultivation experiments at several places in southern Norway in districts relatively favourable to climatic conditions. Since the results have been decidedly favourable as regards the quality as well as the quantity, the committee for sugar production, appointed by the farmers' association, is now taking steps towards the founding of a national sugar industry in Norway.

235/64

COMBATING CORROSION

IF, in the machinery you build or operate, there is one single part which is exposed to the corroding influences of moisture, chemicals, food acids or hot gases—if that one detail corrodes, and in corroding, weakens, loses efficiency, leaks or contaminates your product—that one part would be better made from

FIRTH "STAYBRITE"

—the super malleable, super rustless steel.

Firth "Staybrite" is obtainable in the form of :—

BARS, STRUCTURAL SECTIONS, STRIP, SHEETS, PLATE, WIRE, TUBE, FORGINGS AND CASTINGS

Write for Booklet 59 on this subject.

The illustrations show a Chemical Pan made by Messrs. S. Briggs & Co., Ltd., of Burton-on-Trent, and two Budgets made by the Roto Engineering Co., Ltd., Bradford—all being made from Firth "Staybrite" Steel.

HEAT RESISTING STEELS

In addition to their Stainless Steels, Firth's have for many years produced successful HEAT - RESISTING STEELS for application where resistance to scaling combined with optimum strength at high temperature is required. Particulars of these steels will gladly be sent upon request.

THOS. FIRTH & SONS, LIMITED, SHEFFIELD

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgment

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

WILLIAMS, FRANCIS AND SONS, 48, Scrutton Street, E.C., manufacturing chemists. (C.C., 21/1/28.) £17 3s. 6d. November 22.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

BROOKS AND WARBURTON (AMERICAN DRUG SUPPLY CO.), LTD. (late American Drug Supply Co., Ltd.), London, W. (M., 21/1/28.) Registered January 5, £17,500 debentures; general charge. *Nil. February 22, 1927.

EASTERN CHEMICAL CO., LTD., London, E.C. (M., 21/1/28.) Registered January 2, 200,000 rupees (not ex.) charge, to E. D. Sassoon and Co., Ltd., 15, Dougall Street, Ballard Estate, Bombay, merchants; charged on works, etc., at Matunga, Bombay. *£23,511. November 30, 1927.

HAIGH DYEING CO. (1920), LTD., Wigan. (M., 21/1/28.) Registered January 4, £2,000 2nd debenture, to W. H. Heywood, Holly Mount, Edgerton, Huddersfield, glazing engineer; general charge (ranking next after debenture dated March 23, 1927.) *£19,995 13s. 4d. June 16, 1927.

Satisfaction

LEVER BROTHERS, LTD., Port Sunlight, soap manufacturers. (M.S., 21/1/28.) Satisfaction registered January 6, £157,700, part of amount registered. April 13, 1921.

Receivership

STANDARD SOAP CO., LTD. (R., 21/1/28.) H. A. McCann, of 83, Queen Street, E.C.4, was appointed Receiver on December 29, under powers contained in second debentures dated July 22, 1927.

New Companies Registered

CASTLE FORBES WORKS, LTD. Registered in Dublin on January 6 as a "private" company, with a nominal capital of £100,000 in 100,000 shares of £1 each. Soap and candle makers, seed crushers, refiners, etc. A subscriber: J. E. Robinson, "Holmleigh," Highfield Road, Rathgar, Dublin.

F.S.A., LTD., 11, Cromwell Buildings, Blackfriars Street, Manchester. Registered January 17. Nom. capital, £100 in £1 shares (50 ordinary and 50 founders'). To adopt an agreement with E. E. Barton for the purchase of his right, title and interest in the fuel saving compound registered as Argonite and also known as the F.S.A. Fuel Saving Compound, together with the formula thereof, and all trade marks in connection therewith. Directors: E. E. Barton, 541, Stretford Road, Old Trafford, Manchester, W. M. Fitton, and T. Spencer.

LEATHER DRESSINGS, LTD., Moray Works, Durham Road, Seven Sisters Road, London, N. Registered January 14. Nom. capital, £100 in £1 shares. Manufacturers of and dealers in distempers, paints, cellulose varnishes and finishes, dyes, oils, colours, enamels, pigments, glues, tars, chemicals and similar substances, etc.

ROCK HARD ENAMEL CO., LTD. 6-7, Tudor House, Walsall. Registered January 16. Nom. capital, £1,000 in £1 shares. Manufacturers of and dealers in paint, enamel, varnish, colour and colouring material or substitutes, and chemical products, japanners, enamellers, etc. Directors: C. J. Gittins and A. W. Mendez.

SERVICE COMPOSITIONS, LTD. Private company. Registered January 11. Capital, £100 in £1 shares. To carry on the business of manufacturers, importers, exporters and shippers of and dealers in paint, enamels, compositions, lead, turpentine, oils, resins, naphthas, tar, creosote, colourings, pigments, preservatives, sizes, glues, varnishes, distempers, etc. Directors: W. H. Forbes-White and H. Archer, 92, Upper Richmond Road, Putney, London, S.W.15.

Low Temperature Carbonisation

Investigation of Many Coals

THE laboratory staff of Low Temperature Carbonisation, Ltd., is busy testing the suitability of coal from mines in all parts of the country for the production of smokeless fuel. Samples of coal from more than twenty pits in Great Britain have been forwarded to Low Temperature Carbonisation, Ltd., for tests in the retorts. The pits embrace such widely diverse areas as the coalfields of Northumberland and Durham, South Wales, Yorkshire and Kent.

It is believed that nearly all the samples of coal dust (or slack) submitted for treatment has proved capable of being made into high quality coalite and that the yield of rich gas, tar oils and spirit is also satisfactory. In the case of the Kentish coalfields the results are particularly interesting, inasmuch as it is thought that the position of the coal industry in that district may be materially strengthened by the utilisation of the low temperature carbonisation process. Samples of coal have also been submitted for test from abroad, notably from Australia, South Africa, Chili, and India.

It is stated that, following the recent announcement that low temperature carbonisation is now being conducted on a commercial basis at Barnsley, the demand by coal retailers for coalite, the residual smokeless fuel, is now in excess of the output. Steps are accordingly being taken to put a further battery of retorts into operation forthwith.

I.C.I. Absorbs a Copper Company

CONFIRMATION has now been made of the rumour that British Copper Manufacturers, Ltd., are to be absorbed by Imperial Chemical Industries, Ltd. Holders of the 800,000 £1 ordinary shares of British Copper Manufacturers will receive 400,000 I.C.I. ordinary shares, and holders of the 400,000 6 per cent. preference shares will receive 350,000 I.C.I. 7 per cent. cumulative preference shares. Admiral Heneage Vivian, a director of British Copper Manufacturers, Ltd., states that he does not believe that any work will be taken from Swansea as a result of the amalgamation. The more likely possibility is that the fusion will result in an extension of the Swansea copper activities.

Benn Brothers' Other Journals

THE CABINET MAKER.—Dictionary of English Furniture (continued); Metallic Bedsteads; Furnishing Hardware.

THE ELECTRICIAN.—Annual Dinner of the Electrical Contractors' Association; Wiring Practice; Contractors as Shopkeepers.

THE FRUIT GROWER.—Railways and Road Powers; A Test of Chrysanthemums; The "Big Bud" problem in Norfolk.

GARDENING ILLUSTRATED.—The Gardens at Foot's Cray Place (illustrated); Naming New Irises; Dwarf Conifers for the Rock Garden; Early Peas.

THE GAS WORLD.—Australian Gas Institute; Presidential Address by Mr. Andrew Wilson; Conspiracy Charge against Company Promoters at the Old Bailey; "Methods of Radiant Heating," by A. H. Barker.

THE HARDWARE TRADE JOURNAL.—Merchandise Marks Act; Enamelled Sheets Inquiry; Ironmongers and Household Appliances; British Hardware Exports; The Radio Counter.

THE TIMBER TRADES JOURNAL.—Arbitration; The Submission; In Defence of Danzig Trade; Review of Canadian Timber Trade.